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New species of Afrotropical Dryinidae (Hymenoptera: Chrysidoidea), with description of a new genus and a new subfamily

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ABSTRACT

A contribution to the knowledge of Afrotropical Dryinidae (Hymenoptera: Chrysidoidea) is presented. A new subfamily, Apoaphelopinae, is proposed for *Apoaphelopus*, a new genus including two new species—*A. mostovskii* from KwaZulu-Natal, South Africa, and *A. niassensis* from Niassa, Mozambique. The following new Afrotropical species are described: from South Africa: *Conganteon kolyadai*, *C. walkerense*; *Deinodryinus capensis*, *D. umtamvunensis*; *Anteon kwazuluense*, *A. simoni*; *Bocchus whiteleyi*, *B. kogelbergensis*; *Dryinus irwini*; *Adryinus mostovskii*; *Gonatopus kolyadai*; from Madagascar and South Africa: *Anteon terminale*; from Kenya: *Thaumatodryinus sokokensis*; from Cameroon: *Gonatopus camposensis*; from Namibia and South Africa: *Gonatopus maritimus*; from Namibia: *Gonatopus fortis*, *G. karibibensis*; from Burkina Faso: *Gonatopus savanensis*. A new synonymy is proposed for the following genus: *Prioranteon* Olmi, 1984, under *Deinodryinus* R. Perkins, 1907. A new synonymy is proposed for the following species: *Deinodryinus nigerensis* Olmi, 1990, under *Deinodryinus paulyi* (Olmi, 1987). The following new combinations are proposed: *Deinodryinus paulyi* (Olmi, 1987) from *Prioranteon*; *Gonatopus cornutus* (Benoit, 1951) from *Pseudogonatopus*.

KEY WORDS: Hymenoptera, Dryinidae, Anteoninae, Apoaphelopinae, Conganteoninae, Dryininae, Gonatopodinae, wasps, new taxa, Africa.

INTRODUCTION

Dryinidae (Hymenoptera: Chrysidoidea) are parasitoids of leafhoppers, planthoppers and treehoppers (Hemiptera: Auchenorrhyncha) (Guglielmino & Olmi 1997, 2006).

After the old papers of Kieffer and Marshall (1904–06), Brues (1906), Cameron (1906), Kieffer (1913, 1914), Turner (1928), Ceballos (1936) and Benoit (1950, 1951*a*, *b*, *c*, *d*, 1953*a*, *b*), the systematics of Afrotropical Dryinidae was studied in recent years by Olmi (1984, 1986, 1987*a*, *b*, *c*, 1989, 1990*a*, *b*, 1992*a*, *b*, 1993, 1994*a*, *c*, 1995*a*, *b*, 1998*a*, *b*, *c*, *d*, 1999*b*, 2002, 2003, 2004*a*, *b*, *c*, 2005, 2006) and Ponomarenko and Olmi (2006).

However, the situation is not satisfactory for the following main reasons:

(1) too many species are known on the basis of a single sex only, usually female (for example, in the best known African country, South Africa, both sexes are known in only 45 of 119 species of Dryinidae);

(2) too few hosts are known (in South Africa the hosts are known for only 14 dryinid species);

(3) the number of known Afrotropical species (275) is considered too small in comparison with the real population present in sub-Saharan Africa (Olmi 2006).

The sexual dimorphism of Dryinidae presents a major problem in making a correct association of sexes. This may be solved only by rearing. However, too few researchers are studying and rearing dryinids, so that a solution is not yet near. Rearing is also necessary in order to discover hosts of dryinids.

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From January to June 2006 I collected extensively, and reared dryinids, in South Africa, Namibia and Mozambique. This research resulted in the discovery of new species, a new genus and a new subfamily described in this paper, and the hosts of many other species. In addition, I examined many specimens from Austral Africa deposited in many collections. The above studies made possible this present paper to be considered—for the data regarding South Africa—a supplement to the catalogue published by Olmi (2006).

MATERIAL AND METHODS

The descriptions follow the terminology used by Olmi (1984) and partly revised after Gauld and Bolton (1988) and Olmi (1994*b*, 1999*a*). The measurements reported are relative, except for the total length (head to abdominal tip, without the antennae) which is expressed in millimetres.

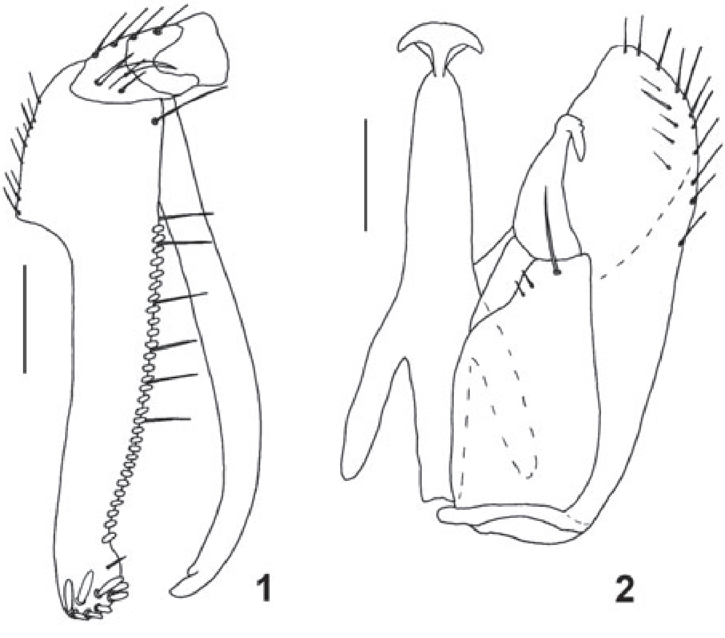
In the descriptions, the following abbreviations are used:

POL – the distance between the inner edges of the two lateral ocelli;
OL – the distance between the inner edges of a lateral ocellus and the median ocellus;
OOL – the distance from the outer edge of a lateral ocellus to the compound eye;
OPL – the distance from the posterior edge of a lateral ocellus to the occipital carina;
TL – the distance from the posterior edge of an eye to the occipital carina.

In the figures of male genitalia, the left half is omitted.

The study techniques were those proposed by Olmi (1984, 1994*b*, 1999*a*).

Rearing data are abbreviated as follows: C – collection date of parasitised host; B – emergence date of mature dryinid larva; E – emergence date of dryinid adult.



Figs 1, 2. *Conganteon kolyadai* sp. n.: (1) chela of female holotype, scale bar = 0.06 mm; (2) genitalia of male paratype from East London, scale bar = 0.08 mm.

The material studied in this paper is deposited in the following collections: American Entomological Institute, Gainesville, Florida, USA (AEIC); American Museum of Natural History, New York, USA (AMNH); The Natural History Museum, London, UK (BMNH); California Academy of Sciences, San Francisco, California, USA (CAS); Canadian National Collection of Insects, Ottawa, Canada (CNCI); Faculté des Sciences Agronomiques de l'État, Gembloux, Belgium (FSAG); M. Olmi's collection, c/o Department of Plant Protection, University of Tuscia, Viterbo, Italy (MOLC); Natal Museum, Pietermaritzburg, KwaZulu-Natal, South Africa (NMSA); Namibian National Insect Collection, Windhoek, Namibia (NNIC); South African Museum, Cape Town, South Africa (SAMC); National Collection of Insects, Plant Protection Research Institute, Pretoria, South Africa (PPRI-NCI); Department of Entomology, Texas A. & M. University, College Station, Texas, USA (TAMU); National Museum of Natural History, Washington, D.C., USA (USNM).

TAXONOMY

Subfamily Conganteoninae Olmi, 1984

Genus *Conganteon* Benoit, 1951

Conganteon kolyadai sp. n.

Figs 1, 2

Etymology: This species is named after Dr Victor Kolyada.

Description:

Female.

Fully winged; length 2.81–3.37 mm (holotype 3.37 mm). Head black, with mandibles, clypeus, genae and anterior third or fourth of face whitish; antennae testaceous, with segments 7–10 slightly darkened; mesosoma black, with pronotal tubercles and part of lateral regions of pronotum whitish or testaceous; gaster brown; legs completely whitish. Antennae clavate; antennal segments of holotype in following proportions: 10:5:14:11:9.5:8:6.5:6:6:8. Head dull; face and vertex completely reticulate rugose or impressed with very large punctures; in a few paratypes face with a more or less large smooth and finely punctate area in front of anterior ocellus; temples reticulate rugose; frontal line complete; occipital carina complete; POL = 6; OL = 3.5; OOL = 9; OPL = 7; TL = 9; greatest diameter of posterior ocelli = 3. Scutum reticulate rugose, with posterior third or half strongly punctate and without sculpture among punctures. Notauli absent, or barely developed near anterior margin of scutum. Scutellum and metanotum punctate, without sculpture among punctures. Propodeum reticulate rugose, without transverse or longitudinal keels. Forewing partly hyaline and partly slightly darkened; distal part of stigmal vein longer than proximal part (14:9). Fore tarsal segments in following proportions: 15:4:4:12:15. Enlarged claw (Fig. 1) with small subapical tooth, without bristles or hairs. Segment 5 of front tarsus (Fig. 1) with 1 row of approximately 31 short and small lamellae; distal apex with group of about 5 small lamellae, in addition to 3 longer lamellae. Tibial spurs 1, 1, 2.

Male.

Fully winged; length 2.68–3.31 mm. Head black, with mandibles, clypeus, genae and anterior third of face whitish; antennae testaceous, with segments 7–10 slightly darkened; mesosoma black, with pronotal tubercles and part of lateral regions of pronotum whitish or testaceous; gaster brown; legs completely whitish. Antennae filiform; antennal segments in following proportions: 9:4:12.5:10:10.5:10.5:9:8:6.5:9. Head dull; face and vertex reticulate rugose, or impressed with very large punctures; in a few paratypes face with a more or less large smooth and punctate area in front of anterior ocellus; temples reticulate rugose; frontal line complete; occipital carina complete; POL = 6; OL = 4; OOL = 8.5; OPL = 7; TL = 10; greatest diameter of posterior ocelli = 3. Scutum reticulate rugose, with posterior third or half punctate and without sculpture among punctures. Notauli absent, or barely visible near anterior margin of scutum. Scutellum and metanotum punctate, without sculpture among punctures. Propodeum reticulate rugose, without transverse or longitudinal keels. Forewing partly hyaline and partly slightly darkened; distal part of stigmal vein longer than proximal part (13:10). Genitalia in Fig. 2. Tibial spurs 1, 1, 2.

Holotype: ♀ "SOUTH AFRICA: *Eastern Cape*, East London, 32°58.9'S:27°53.2'E, alt. 375 ft., 24–29.xii.2004, Malaise trap, M. Mostovski"; [red] "*Conganteon kolyadai* sp. n. M. Olmi det. 2005 ♀" (NMSA).

Paratypes: same data as holotype, 1♀ 2♂ (NMSA), 1♀ 1♂ (MOLC); *KwaZulu-Natal*: Pietermaritzburg, Karkloof Nat. Res. (East), Unit 4, 29°19.1'S:30°15.5'E, alt. 1345 m, 22–24.iv.2005, yellow pan trap, V. Kolyada, 8♀ 5♂ (NMSA); Pietermaritzburg, Ferncliff Nat. Res., 29°33.2'S:30°20.6'E, alt. 850 m, 6–8.iv.2005, yellow pan trap, V. Kolyada, 3♀ (NMSA).

Hosts: Unknown.

Comparison: The female and male of *C. kolyadai* differ from all other Afrotropical *Conganteon* in having whitish or testaceous lateral regions and posterior tubercles of the pronotum, whereas the latter is entirely black in the other species.

Conganteon walkerense sp. n.

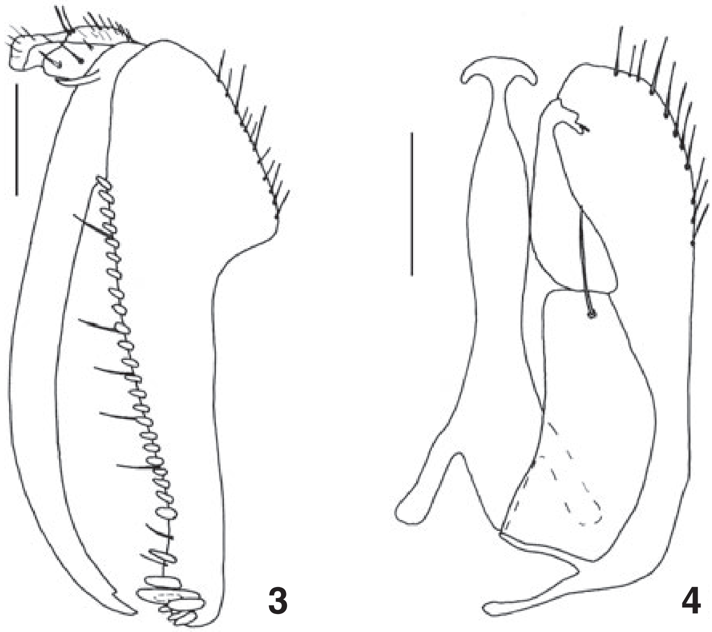
Figs 3, 4

Etymology: This species is named after the type locality, Walker Bay Nat. Res.

Description:

Female.

Fully winged; length 2.31–2.62 mm (holotype 2.31 mm). Head black, with mandibles and clypeus testaceous; antennae of holotype testaceous, with segments 7–10 brown; antennae of paratype brown, with segments 1 and 2 testaceous; mesosoma black; gaster brown; legs of holotype testaceous; legs of paratype testaceous, with coxae and clubs of mid and hind femora partly brown. Antennae clavate; antennal segments of holotype in following proportions: 8.5:5:8:6:5:4.5:4.5:4.5:4:6; antennal segments of paratype in following proportions: 8:5:8.5:6:5:5:4.5:4:4:5. Head of holotype dull, almost completely sculptured by irregular longitudinal keels, except small punctate area in front of anterior ocellus; head of paratype shiny, punctate, without sculpture among punctures; sides of face, temples and vertex behind ocellar triangle slightly rugose or sculptured by irregular keels; frontal line complete; face without lateral keels; occipital carina complete. Head of holotype with POL = 5; OL = 3; OOL = 7; OPL = 4; TL = 10; greatest diameter of posterior ocelli: 2. Head of paratype with POL = 6; OL = 3; OOL = 7.5; OPL = 5; TL = 9; greatest diameter of posterior ocelli = 2.5. Pronotum very short, transverse, reticulate rugose; pronotal tubercles reaching tegulae. Scutum punctate, without sculpture among punctures, rugose near anterior margin. Notauli incomplete, reaching approximately 0.6 length of scutum. Scutellum and metanotum smooth, finely punctate, without sculpture



Figs 3, 4. *Conganteon walkerense* sp. n.: (3) chela of female holotype, scale bar = 0.04 mm; (4) genitalia of male paratype, scale bar = 0.08 mm.

among punctures. Propodeum reticulate rugose, without transverse or longitudinal keels. Forewing hyaline, without dark transverse bands; distal part of stigmal vein longer than proximal part (10:7 in holotype; 8.5:8 in paratype). Fore tarsal segments of holotype in following proportions: 11:2:3:4.5:10.5; fore tarsal segments of paratype in following proportions: 11:2.5:2.5:5:11. Enlarged claw (Fig. 3) with small subapical tooth, without bristles or hairs. Segment 5 of front tarsus (Fig. 3) with 1 row of 26–31 lamellae (26 in holotype); distal apex with group of at least 7–12 lamellae (12 in holotype). Chela with rudimentary claw. Tibial spurs 1, 1, 2.

Male.

Fully winged; length 2.12–2.81 mm. Head black, with mandibles testaceous; antennae brown; mesosoma black; gaster brown; legs brown, occasionally with fore tibiae and fore tarsi testaceous. Antennae filiform; antennal segments in following proportions: 7:4:6.5:7:6:5.5:5:5:4.5:5.5. Antennal segment 9 about twice as long as broad: 4.5:2.2. Head shiny, punctate, without sculpture among punctures; sides of face, temples and vertex behind ocellar triangle slightly rugose or sculptured by irregular keels; frontal line complete; occipital carina complete; POL = 6; OL = 3; OOL = 6; OPL = 5; TL = 8; greatest diameter of posterior ocelli = 2.5. Pronotum very short, transverse, rugose. Scutum shiny, smooth, punctate, without sculpture among punctures, slightly rugose near anterior margin. Notauli distinct, incomplete, reaching approximately 0.6 length of scutum. Scutellum and metanotum shiny, punctate, without sculpture among punctures. Propodeum reticulate rugose, without transverse or longitudinal keels. Forewing hyaline, without dark transverse bands; distal part of stigmal vein longer than proximal part (11:7). Genitalia as in Fig. 4. Tibial spurs 1, 1, 2.

Holotype: ♀ "SOUTH AFRICA: *Western Cape*, Walker Bay Nat. Res., 34°27.41'S:19°21.39'E, 11.viii–6.ix.1997, S. van Noort"; [red] "*Conganteon walkerense* sp. n. M. Olmi det. 2005 ♀" (SAMC).

Paratypes: SOUTH AFRICA: *Western Cape*: Koeberg Nat. Res., 33°37.62'S:18°24.26'E, 23.i–20.ii.1998, yellow pan trap, S. van Noort, 1♀ 1♂ (SAMC); same locality label, 20.iii–19.iv.1998, 1♂ (SAMC); same locality label, 23.i–20.ii.1998, 1♂ (MOLC).

Hosts: Unknown.

Comparison: The female of *C. walkerense* is similar to that of *C. transvaalense* Olmi, 1990, but the basal part of segment 5 of fore tarsi is much shorter than distal part Fig. 3), whereas in *C. transvaalense* it is about as long as distal part (Olmi 1990*b*, fig. 4H). The male of *C. walkerense* is similar to that of *C. vannoorti* Olmi, 2006, but the head is black, with only mandibles testaceous (head black, with mandibles, clypeus and anterior region of face testaceous in *C. vannoorti*), the antennal segment 9 is about twice as long as broad (more than 3 times as long as broad in *C. vannoorti*) and the frontal line is distinct (evanescent in *C. vannoorti*).

Key to *Conganteon* females (female of *C. vannoorti* is unknown)

1 Segment 1 of front tarsus less than twice as long as segment 4 2
– Segment 1 of front tarsus more than twice as long as segment 4 3
2 Pronotum completely black .... **townesi** Olmi
– Pronotum with lateral regions and pronotal tubercles partly whitish or testaceous .... **kolyadai** sp. n.
3 Scutum completely reticulate rugose; scutellum almost completely reticulate rugose .... **vulcanicum** Benoit
– Scutum partly reticulate rugose and partly punctate and without sculpture among the punctures; scutellum smooth, finely punctate, without sculpture among the punctures 4
4 Segment 5 of front tarsus with basal part approximately as long as distal part (Olmi 1990*b*, fig. 4H) .... **transvaalense** Olmi
– Segment 5 of front tarsus with basal part much shorter than distal part (Fig. 3).... .... **walkerense** sp. n.

Key to *Conganteon* males (male of *C. transvaalense* is unknown)

1 Pronotum with sides and pronotal tubercles partly whitish or testaceous .... **kolyadai** sp. n.
– Pronotum completely black 2
2 Scutum punctate, without sculpture among punctures, at most rugose near anterior margin; notauli distinct, incomplete; face completely or mostly punctate, without sculpture among punctures, occasionally with sides rugose 3
– Scutum completely reticulate rugose; notauli absent; face completely reticulate rugose 4
3 Head black, with mandibles, clypeus and anterior region of face testaceous; antennal segment 9 more than 3 times as long as broad; frontal line evanescent .... **vannoorti** Olmi
– Head black, with only mandibles testaceous; antennal segment 9 about twice as long as broad; frontal line distinct .... **walkerense** sp. n.

4 Vertex of head in front of the occipital carina shiny, with longitudinal keels, not reticulate rugose .... **townesi** Olmi

– Vertex of head in front of the occipital carina dull, reticulate rugose, with no longitudinal keels .... **vulcanicum** Benoit

Subfamily Anteoninae R. Perkins, 1912

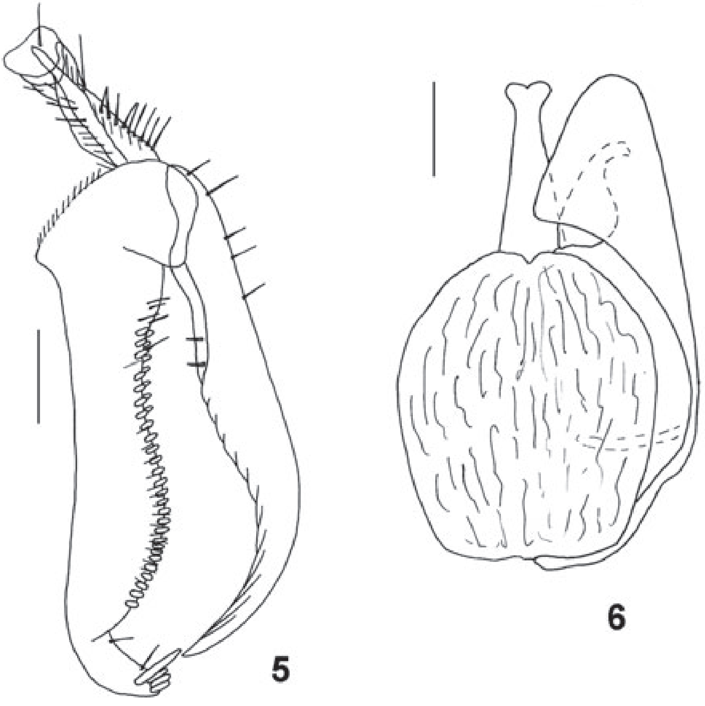
Genus *Deinodryinus* R. Perkins, 1907

Deinodryinus: R. Perkins 1907: 45. Type species: *Deinodryinus paradoxus* R. Perkins, 1907, designated by Muesebeck and Walkley (1951).

Prioranteon Olmi, 1984: 589. Type species: *Prioranteon casalei* Olmi, 1984, by original designation. **Syn. n.**

The genus *Prioranteon* Olmi, 1984 was described on the basis of female specimens only. Though the chela is like that of *Deinodryinus*, the females of *Prioranteon* are micropterous, whereas those of *Deinodryinus* are macropterous. The presence/reduction of the wings resulted in a distinct difference of mesosoma structure, so waiting for the discovery of the male, Olmi (1984) preferred to consider *Prioranteon* a valid genus, distinct from *Deinodryinus*.

In 2006, I reared in Namibia, 40 km west of Keetmanshoop, both sexes of *Prioranteon paulyi*. The male of *P. paulyi* was identified as *Deinodryinus nigerensis*, demonstrating that *Prioranteon* is a junior synonym of *Deinodryinus*. The species attributed to *Prioranteon* are only micropterous females of *Deinodryinus*. *D. nigerensis* was demonstrated to be a junior synonym of *D. paulyi*.



Figs 5, 6. (5) *Deinodryinus capensis* sp. n., female holotype, chela, scale bar = 0.06 mm; (6) *D. umtamvunensis* sp. n., male holotype, genitalia, scale bar = 0.04 mm.

Deinodryinus paulyi (Olmi, 1987), **comb. n.**

Prioranteon paulyi Olmi, 1987*a*: 409 (Type locality: Tattaguine, Senegal).
Deinodryinus nigerensis Olmi, 1990*b*: 131 (Type locality: Tarna Goulbin, Niger). **Syn. n.**

Type material examined: *P. paulyi* holotype 1♀: "SENEGAL: Tattaguine" (FSAG); *P. paulyi* paratype: CAPE VERDE IS.: São Tiago I., Moia-Moia, A. van Harten, 1♀ (AMNH); *D. nigerensis* holotype 1♂: "NIGER: *Maradi*, Tarna Goulbin, 2–6.ix.1985, G.J. Steck" (USNM); *D. nigerensis* paratypes: NIGER: same data as holotype, 10–13.ix.1985, 2♂ (AMNH, TAMU).

Other material examined: NAMIBIA: 40 km W Keetmanshoop, along Rd B4; C – 10.iii.2006, B – 16.iii.2006, E – 7.iv.2006, reared from an adult of *Exitianus nanus* (Distant), M. Olmi, 1♀ (MOLC); same locality label, C – 10.iii.2006, B – 14.iii.2006, E – 7.iv.2006, ex *Aconurella compta* (Naudé), 1♀ (NNIC); same locality label, C – 10.iii.2006, B – 10.iii.2006, E – 3.iv.2006, ex *A. compta*, 1♂ (MOLC); same locality label, C – 10.iii.2006, B – 11.iii.2006, E – 4.iv.2006, ex *A. compta*, 1♂ (MOLC); same locality label, C – 10.iii.2006, B – 12.iii.2006, E – 5.iv.2006, ex *A. compta*, 1♂ (MOLC); same locality label, C – 10.iii.2006, B – 18.iii.2006, E – 6.iv.2006, ex *A. compta*, 1♂ (MOLC); same locality label, C – 10.iii.2006, B – 18.iii.2006, E – 7.iv.2006, ex *A. compta*, 2♂ (NNIC, MOLC); same locality label, C – 10.iii.2006, B – 13.iii.2006, E – 5.iv.2006, ex *Exitianus okahandia* Ross, 1♂ (MOLC); Namib/Naukluft Park, Kuiseb River near Gobabeb, 23°34'S:15°03'E, 18.ii–20.iii.1983, 1♂ (PPRI-NCI); SENEGAL: 15 km S of Guignol, 6.x.1978, 1♂ (USNM).

Hosts: In Namibia, *Aconurella compta*, *Exitianus nanus* and *E. okahandia* (Cicadellidae).

Comments: Those listed above are the only known specimens of *D. paulyi*.

Deinodryinus capensis sp. n.

Fig. 5

Etymology: This species is named after the type locality, Western Cape.

Description:

Female.

Micropterous; forewing very reduced, reaching transverse furrow behind metanotum, slightly longer than scutellum (6:5). Length 3.18–4.25 mm (holotype 3.43 mm). Holotype testaceous, with antennal segments 8–10, ocellar area, prosternum, lateral regions of pronotum, posterior half of gaster darkened; scutum, metanotum, transverse furrow behind metanotum, posterior half of propodeum and petiole black; mesopleura and metapleura partly darkened; legs testaceous, with mid and hind coxae and clubs of hind femora darkened. Two paratypes from Kogelberg Nat. Res. broadly darkened or black, as follows: head testaceous, with ocellar region darkened; mesosoma black, with propleura, disc of pronotum, posterior collar of pronotum, scutellum, part of mesopleura testaceous; gaster partly testaceous and partly darkened or brown. Antennae clavate; antennal segments of holotype in following proportions: 7:5:15:11:10:8:7.5:7:6:9.5; antennal segments of a paratype in following proportions: 7:3:12.5:9:7:7:6:6:5:6.5. Head shiny, smooth, slightly granulated; occipital carina complete; frontal line absent; face with slender longitudinal furrow from anterior ocellus to clypeus; anterior region of face with tuft of long hairs. Head of holotype with POL = 2; OL = 3; OOL = 8.5; OPL = 5; TL = 10; greatest diameter of posterior ocelli = 2. Head of a paratype with POL = 2; OL = 2; OOL = 7; OPL = 4.5; TL = 9; greatest diameter of posterior ocelli = 1.5. Pronotum shiny, smooth, without sculpture, not crossed by transverse impressions, with short anterior collar; pronotal tubercles reaching tegulae. Scutum very reduced, rugose. Scutellum and metanotum shiny, smooth, without sculpture. Propodeum dull, with strong anterior transverse and rugose furrow situated behind metanotum; anterior surface of propodeum smooth, granulated; posterior surface of propodeum reticulate rugose.

Mesopleura and metapleura granulated, dull, with a few transverse keels. Meso-metapleural suture distinct and complete. Mesopleura with tufts of long hairs situated on sides of transverse furrow behind metanotum. Fore tarsal segments of holotype in following proportions: 10:2:5:13:22. Fore tarsal segments of a paratype in following proportions: 9:2:4:10:17. Chela (Fig. 5) without rudimentary claw. Enlarged claw (Fig. 5) with 2 peg-like lamellae situated further distally than proximal prominence. Segment 5 of front tarsus (Fig. 5) with 2 rows of about 23–32 lamellae (32 in holotype); distal apex with group of 4 lamellae, among which one very long. Tibial spurs 1, 1, 2.

Male. Unknown.

Holotype: ♀ "SOUTH AFRICA: *Western Cape*, Walker Bay Nat. Res., 34°27.41'S:19°21.39'E, 29.xi–26.xii.1997, yellow pan trap, S. van Noort & B. Fisher"; [red] "*Deinodryinus capensis* sp. n. M. Olmi det. 2005 ♀" (SAMC).

Paratypes: SOUTH AFRICA: *Western Cape*: Kogelberg Nat. Res., 34°15'S:19°05'E, 16.xii.1999–16.i.2000, pitfall trap, S. van Noort, 1♀ (SAMC); same locality label, 16.iv.1999, S. van Noort, 1♀ (MOLC).

Hosts: Unknown.

Comparison: The female of *D. capensis* is similar to that of *D. paulyi*, but the anterior surface of the propodeum is granulated (by contrast, in *D. paulyi* this surface is reticulate rugose).

Key to micropterous females of Afrotropical *Deinodryinus* (former *Prioranteon*)

1 Posterior surface of propodeum transversely striate .... **richardsi** (Olmi)
– Posterior surface of propodeum reticulate rugose, not transversely striate 2

2 Anterior surface of propodeum shiny, smooth, without sculpture... **casalei** (Olmi)
– Anterior surface of propodeum reticulate rugose or granulated 3

3 Anterior surface of propodeum granulated .... **capensis** sp. n.
– Anterior surface of propodeum reticulate rugose 4

4 Mesosoma completely yellow-testaceous; enlarged claw with 1 peg-like lamella (Olmi 1987*a*, fig. 39) .... **paulyi** (Olmi)
– Mesosoma mostly black almost completely black; enlarged claw with 2 bristles (Olmi 1987*c*, fig. 12) .... **prinslooi** (Olmi)

Deinodryinus umtamvunensis sp. n.

Fig. 6

Etymology: This species is named after the type locality, Umtamvuna Nat. Res.

Description:

Male.

Fully winged; length 1.56–1.81 mm (holotype 1.81 mm). Head black, with mandibles testaceous; antennae brown, with segment 1 testaceous; mesosoma and gaster black; legs testaceous. Antennae filiform, with hairs at most as long as breadth of segments; antennal segments in following proportions: 7.5:5:6:6:6:6:5.5:5.5:5.5:7.5. Head shiny, punctate, without sculpture among punctures; frontal line absent; occipital carina complete; POL = 5; OL = 3; OOL = 4; OPL = 2.5; TL = 4; greatest diameter of posterior ocelli = 2. Scutum shiny, finely punctate, without sculpture among punctures. Notauli incomplete, reaching approx. 0.60 length of scutum. Scutellum and metanotum shiny, smooth, without sculpture. Propodeum with strong transverse keel between dorsal and posterior surface; dorsal surface large, reticulate rugose; posterior surface with two longitudinal keels and with median and lateral areas reticulate rugose. Forewing hyaline, without dark transverse bands; distal part of stigmal vein much shorter than proximal part (3.5:8). Parameres (Fig. 6) with large apical branch wrapping penis and large dorsal proximal membranous process. Tibial spurs 1, 1, 2.

Female. Unknown.

Holotype: ♂ "SOUTH AFRICA: *KwaZulu-Natal*, Umtamvuna Nat. Res., 31°03.509'S:30°10.484'E, 160 m, 11–12.xi.2000, Malaise trap, KW00-M08, Coastal forest/Pondoland Coastal Plateau, sour Grassland margin, S. van Noort"; [red] "*Deinodryinus umtamvunensis* sp. n. M. Olmi det. 2005 ♂" (SAMC).

Paratype: same data as holotype, 1♂ (SAMC).

Hosts: Unknown.

Comparison: The male of *D. umtamvunensis* is similar to that of *D. monticolus* Olmi, 1984, but its head is punctate and without sculpture among punctures, whereas in *D. monticolus* it is granulated and reticulate rugose.

Genus *Anteon* Jurine, 1807

Anteon kwazuluense sp. n.

Figs 7, 8

Etymology: This species is named after the province of KwaZulu-Natal.

Description:

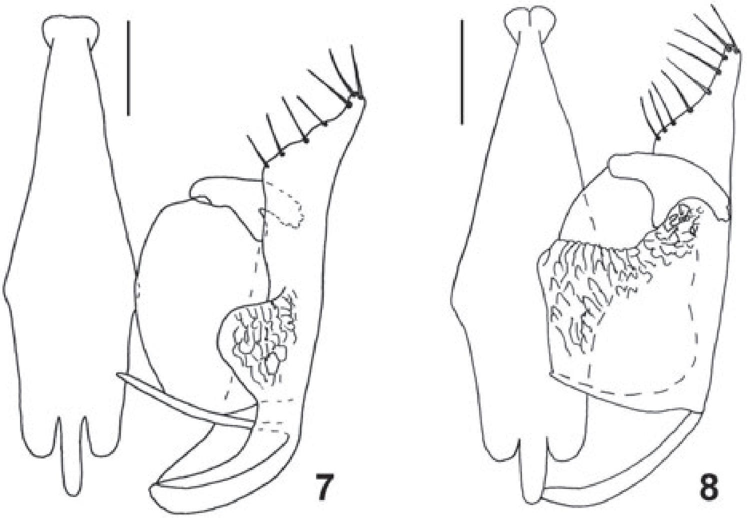
Male.

Fully winged; length 1.37–1.75 mm (holotype 1.62 mm). Head black, with mandibles testaceous; antennae testaceous; occasionally testaceous-darkened, with segments 1 and 2 testaceous; mesosoma black; gaster brown; legs testaceous, occasionally with stalks of hind femora darkened. Antennae filiform; antennal segments in following proportions: 6:3.5:4.5:4:4:4.5:4.5:4:4.5:6. Head dull, completely strongly granulated, or with face granulated and very slightly rugose; frontal line absent; face without lateral keels; occipital carina complete; POL = 5; OL = 3; OOL = 4; OPL = 2; TL = 3; greatest diameter of posterior ocelli = 2. Scutum dull, completely strongly granulated, with region strictly close to anterior margin slightly rugose. Notauli only barely present near anterior margin of scutum. Scutellum and metanotum shiny, smooth, without sculpture. Propodeum with strong transverse keel between dorsal and posterior surface; dorsal surface reticulate rugose, dull; posterior surface dull, reticulate rugose, without longitudinal keels, with areolae smaller than those of dorsal region. Forewing hyaline, without dark transverse bands; distal part of stigmal vein much shorter than proximal part (2.5:6.5). Parameres (Figs 7, 8) without distal inner pointed process, with an inner more or less large proximal lobe showing mosaic drawing and not covered with papillae. Tibial spurs 1, 1, 2.

Female. Unknown.

Holotype: ♂ "SOUTH AFRICA: *KwaZulu-Natal*, Queen Elizabeth Park Res. [29º34.157'S:30º19.299'E], alt. 833 m, nr. stream, 1.xii.2003, J. Londt & M. Mostovski"; [red] "*Anteon kwazuluense* sp. n. M. Olmi det. 2005 ♂" (NMSA).

Paratypes: SOUTH AFRICA: *KwaZulu-Natal*: Royal Natal Nat. Park, 28°41.4'S:28°56.3'E, alt. 1420 m, 10–13.xii.2004, Malaise trap, M. Mostovski, 1♂ (NMSA); Ramsgate, Butterfly Sanctuary, 30°53.3'S:30°20.4'E,



Figs 7, 8. *Anteon kwazuluense* sp. n., genitalia: (7) male holotype, scale bar = 0.03 mm; (8) male paratype from Royal Natal Nat. Park, scale bar = 0.04 mm.

Malaise trap near stream, 1.xi–2.xii.2004, M. Mostovski, 1♂ (NMSA); same locality, 3–26.ii.2005, 2♂ (NMSA); same locality, 20.iii–25.iv.2005, 1♂ (MOLC); Pietermaritzburg, Hilton, 29°32'30"S:30°18'18"E, alt. 1131 m, garden, 6–14.iii.2005, yellow pan trap, V. Kolyada, 1♂ (NMSA).

Hosts: Unknown.

Comments: The male of *A. kwazuluense* is similar to those of *A. brooksi* Olmi, 2003, and *A. evertsi* Olmi, 1989. The main difference between *A. brooksi* and *A. kwazuluense* concerns the sculpture and position of the inner lobe of the parameres (subdistal and covered with papillae in *A. brooksi*; proximal, showing a mosaic drawing and not covered with papillae in *A. kwazuluense*). The main difference between *A. evertsi* and *A. kwazuluense* concerns the parameres (with an inner lobe showing a mosaic drawing in *A. kwazuluense*; without an inner lobe in *A. evertsi*).

Anteon simoni sp. n.

Fig. 9

Etymology: This species is named after Dr Simon van Noort.

Description:

Female.

Fully winged; length 2.12–2.81 mm (holotype 2.81 mm). Head black, with mandibles testaceous; antennae testaceous, with segments 7–10 brownish; mesosoma and gaster black; legs testaceous, with clubs of femora, hind coxae, mid and hind tibiae darkened. Antennae clavate; antennomeres as following: 10:5:6:4.5:4.5:5:5:5.5:5:7. Head completely reticulate rugose; frontal line complete; face without lateral keels directed towards antennal toruli; occipital carina complete; POL = 9; OL = 6; OOL = 5; OPL = 5.5; TL = 4; greatest diameter of posterior ocelli = 2. Pronotum with anterior surface rugose; posterior surface less than 0.5 as long as scutum (6:15), rugose, with posterior half smooth and without sculpture. Scutum shiny, smooth, punctate, without sculpture among punctures. Notauli reaching approximately 0.3 length of scutum; in a paratype notauli almost completely absent. Scutellum and metanotum shiny, smooth, without sculpture. Mesopleura with anterior half reticulate rugose and posterior half smooth, punctate, without sculpture among punctures; metapleura completely reticulate rugose. Propodeum with strong transverse keel between dorsal and posterior surface; dorsal surface reticulate rugose, more than 0.5 as long as scutellum + metanotum (9:14); posterior surface reticulate rugose, without longitudinal keels. Forewing with dark transverse band beneath pterostigma; distal part of stigmal vein much shorter than proximal part (3:8). Fore tarsal segments in following proportions: 10:2:2:2.5:8.5; segment 4 of fore tarsi less than 0.5 as long as basal part of segment 5. Enlarged claw (Fig. 9) with proximal prominence bearing 1 long bristle. Segment 5 of front tarsus (Fig. 9) with some medial and proximal bristles and 5 distal lamellae. Tibial spurs 1, 1, 2.

Male. Unknown.

Holotype: ♀ "SOUTH AFRICA: *Western Cape*, Walker Bay Nat. Res., 34°27.41'S:19°21.39'E, ix–xii.1997, Malaise trap, S. van Noort"; [red] "*Anteon simoni* sp. n. M. Olmi det. 2005, ♀" (SAMC).

Paratypes: Same data as the holotype, 2♀ (SAMC, MOLC).

Hosts: Unknown.

Comparison: The female of *A. simoni* is similar to that of *A. glabrum* Olmi, 1987, but the anterior dorsal surface of the propodeum is more than 0.5 as long as the scutellum and metanotum combined (in *A. glabrum* it is less than 0.5 as long as the scutellum and metanotum).

Anteon terminale sp. n.

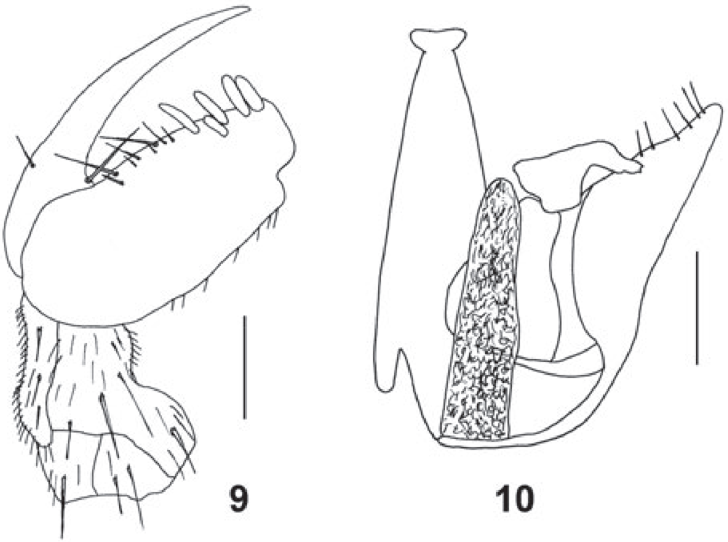
Fig. 10

Etymology: From Latin *terminalis* (terminal).

Description:

Male.

Fully winged; length 1.68–1.87 mm (holotype 1.87 mm). Head black, with mandibles testaceous; antennae testaceous, slightly darkened; mesosoma black; gaster brown; legs testaceous, with hind coxae and hind clubs of femora partly brown. Antennae filiform; antennal segments in following proportions: 8.5:4:5:5:5:5:5:5:4.5:8. Head dull, punctate, without sculpture among punctures, with vertex and temples rugose; frontal line complete; frons without lateral keels directed towards antennal toruli; occipital carina complete; POL = 4.5; OL = 3; OOL = 4.5; OPL = 2; TL = 2.5. Scutum and scutellum shiny, smooth, finely punctate, without sculpture among punctures; notauli incomplete, reaching approximately 0.50 length of scutum. Metanotum shiny, smooth, without sculpture. Propodeum with strong transverse keel between dorsal and posterior surface; dorsal surface reticulate rugose, dull; posterior surface with 2 irregular longitudinal keels, with median area of posterior surface completely shiny, smooth and not rugose and lateral areas rugose. Forewing hyaline, without dark transverse bands; distal part of stigmal vein much shorter than proximal part (2.5:7). Parameres (Fig. 10) without distal inner process, with slender dorsal membranous process. Tibial spurs 1, 1, 2.



Figs 9, 10. (9) *Anteon simoni* sp. n., female holotype, chela, scale bar = 0.06 mm; (10) *Anteon terminale* sp. n., male holotype, genitalia, scale bar = 0.03 mm.

Female. Unknown.

Holotype: ♂ "MADAGASCAR: *Fianarantsoa*, Ranomafana National Park, Vohiparara, 21°13.57'S: 47°22.19'E, at broken bridge, alt. 1110 m, 21–28.i.2002, Malaise trap in high altitude rainforest, R. Harin'Hala, California Academy of Sciences, MA-02-09A-13, CASLOT 010126"; [red] "*Anteon terminale* sp. n. M. Olmi det. 2004 ♂" (CAS).

Paratypes: Same data as holotype, 12–19.iii.2002, MA-02-09A-20, CASLOT 010128, 1♂ (CAS); SOUTH AFRICA: *KwaZulu-Natal*: Ramsgate, Butterfly Sanctuary, 30°53.3'S:30°20.4'E, 9.viii–2.ix.2004 Malaise trap near stream, M. Mostovski, 1♂; same locality, 3.ix–2.x.2004, 1♂; same locality, 20.iii–25.iv.2005, 1♂ (all NMSA).

Hosts: Unknown.

Comparison: The male of *A. terminale* is similar to those of *A. griswoldi* Olmi, 2004, and *A. nigerrimum* Olmi, 2004, but the parameres do not possess a distal inner process (Fig. 10). In *A. griswoldi* and *A. nigerrimum*, the parameres have a distinct distal inner process (Olmi 2004*b*, figs 5, 6).

Subfamily Bocchinae Richards, 1939

Genus *Bocchus* Ashmead, 1893

Bocchus whiteleyi sp. n.

Fig. 11

Etymology: This species is named after Mr Earle Whiteley.

Description:

Male.

Fully winged; length 2.50–3.18 mm (holotype 3.18 mm). Head black, with mandibles testaceous; mesosoma black; gaster brown; antennae testaceous-brown; legs brown, with articulations, tarsi and fore tibiae testaceous. Antennae filiform; antennal segments in following proportions: 13:7:9:8:8:8:8:8:7.5:9.5; antennal segment 6 more than twice as long as broad (8.5:3.5). Head convex, dull, covered with short hairs, completely reticulate rugose; clypeus reticulate rugose; frontal line complete or incomplete (in this last case only present in anterior third of face near clypeus); occipital carina complete; POL = 6; OL = 4; OOL = 9; OPL = 4; TL = 6. Scutum, scutellum and metanotum dull, completely reticulate rugose. Notauli absent. Mesopleura dull, reticulate rugose. Metapleura dull, sculptured by numerous strong transverse keels. Propodeum with strong transverse keel between dorsal and posterior surface; dorsal surface dull, reticulate rugose; posterior surface with two complete longitudinal keels and median area almost completely shiny, smooth and without sculpture, rugose only near margins; lateral areas of posterior surface completely reticulate rugose. Forewing hyaline, without dark transverse bands; distal part of stigmal vein slightly longer than proximal part (13:10); marginal cell open. Genitalia in Fig. 11. Tibial spurs 1, 1, 2.

Female. Unknown.

Holotype: ♂ "SOUTH AFRICA: *KwaZulu-Natal*, Ramsgate, Butterfly Sanctuary, 30°53.3'S:30°20.4'E, 26–28.iii.2004, yellow pan trap, M. Mostovski"; [red] "*Bocchus whiteleyi* sp. n. M. Olmi det. 2005, ♂" (NMSA).

Paratypes: Same data as holotype, 6.vi–9.vii.2004, 9.vii–9.viii.2004, 9.viii–2.ix.2004, 3.ix–2.x.2004, 5♂ (NMSA); same data as holotype, 6.vi–9.vii.2004, 1 ♂ (MOLC).

Hosts: Unknown.

Comparison: The male of *B. whiteleyi* is similar to that of *B. mkomazianus* Olmi, 2005, but its antennae are more slender and the antennal segment 6 is more than twice as long as broad. In *B. mkomazianus*, the antennae are less slender and the antennal segment 6 is less than twice as long as broad.

Bocchus kogelbergensis sp. n.

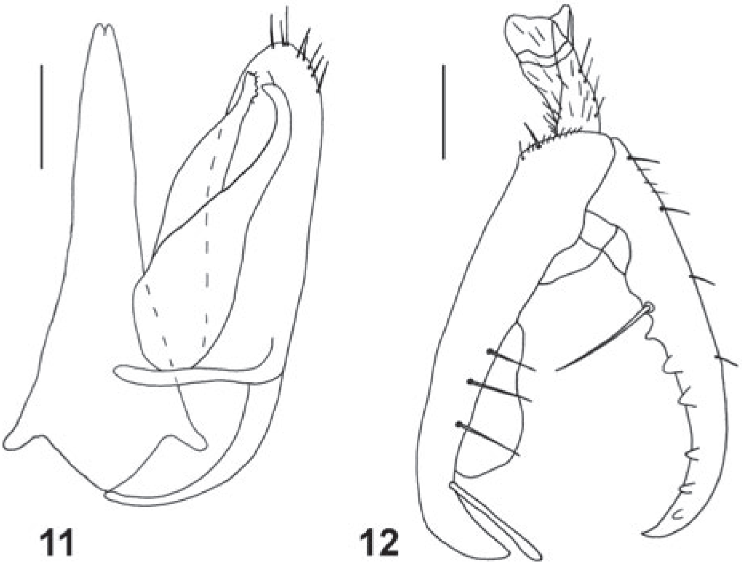
Fig. 12

Etymology: This species is named after the type locality, Kogelberg Nat. Res.

Description:

Female.

Micropterous; forewing about twice as long as tegulae (13:6). Length 3.12–3.50 mm (holotype 3.12 mm). Head black, with mandibles testaceous and clypeus ferruginous; antennae testaceous, with segments 5–10 brown; mesosoma and gaster black; legs testaceous, with coxae and clubs of femora darkened. Antennae clavate; antennal segments in following proportions: 14:7:9:7:7:6:6:5.5:6:8.5. Head dull, hairy, granulated and with many irregular longitudinal keels; frontal line complete; occipital carina complete; dorsal side of head without two lateral keels around orbits; POL = 5; OL = 3.5; OOL = 10; OPL = 8.5; TL = 10; greatest diameter of posterior ocelli = 2. Pronotum hairy, shiny, crossed by transverse impression between anterior and posterior collar; anterior collar partly slightly granulated and partly without sculpture; posterior collar reticulate rugose; pronotal tubercles reaching tegulae. Scutum hairy, dull, reticulate rugose and sculptured by strong irregular longitudinal keels. Notauli absent. Scutellum dull, reticulate rugose. Metanotum very short, reduced. Propodeum hairy, completely reticulate rugose; posterior surface of propodeum without longitudinal keels. Mesopleura and metapleura dull, hairy, reticulate rugose and sculptured by transverse keels. Fore tarsal segments in following proportions: 16:3:3.5:12:17. Enlarged claw (Fig. 12) with



Figs 11, 12. (11) *Bocchus whiteleyi* sp. n., male holotype, genitalia, scale bar = 0.08 mm; (12) *B. kogelbergensis* sp. n., female holotype, chela, scale bar = 0.06 mm.

row of 6 teeth and 1 long bristle. Segment 5 of front tarsus (Fig. 12) with preapical lamella, an inner band and a row of 3 bristles. Tibial spurs 1, 1, 1.

Male. Unknown.

Holotype: ♀ "SOUTH AFRICA: *Western Cape*, Kogelberg Nat. Res., 34°15'S:19°05'E, 16.xii.1999–16.i.2000, pitfall trap, S. van Noort"; [red] "*Bocchus kogelbergensis* sp. n. M. Olmi det. 2005, ♀" (SAMC).

Paratype: same data as the holotype, 1♀ (SAMC).

Hosts: Unknown.

Comparison: The female of *B. kogelbergensis* is similar to that of *B. richardsi* Olmi, 1984, but the body colour is almost completely black (reddish-dark in *B. richardsi*) and the forewing is about twice as long as tegulae (about as long as tegulae in *B. richardsi*).

Subfamily Dryininae Kieffer, 1906

Genus *Thaumatodryinus* R. Perkins, 1905

Thaumatodryinus sokokensis sp. n.

Fig. 13

Thaumatodryinus townesi Olmi, 1984: 692 (*partim*, only male).

Etymology: This species is named after the type locality, Sokoke Forest.

Description:

Male.

Fully winged; length 2.68 mm. Head black, with mandibles testaceous; antennae testaceous, with segments 3–10 darkened; prothorax testaceous; scutum black, with notauli and median region testaceous; rest of mesosoma black; gaster brown; legs testaceous. Antennae filiform; antennomeres as following: 6:6:9:12:11:12:11:10:8:10. Head dull, granulated and reticulate rugose; frontal line absent; occipital carina complete;

POL = 6; OL = 2; OOL = 6; OPL = 1; TL = 4. Scutum dull, granulated and slightly reticulate rugose. Notauli complete, posteriorly separated; minimum distance between notauli as long as POL, longer than greatest diameter of posterior ocelli (5:4), longer than breadth of lateral regions of scutum measured at posterior margin. Scutellum and metanotum shiny, smooth, without sculpture. Propodeum dull, reticulate rugose, without transverse or longitudinal keels. Forewing hyaline, without dark transverse bands; distal part of stigmal vein longer than proximal part. Inner side of parameres (Fig. 13) without mosaic pattern. Tibial spurs 1, 1, 2.

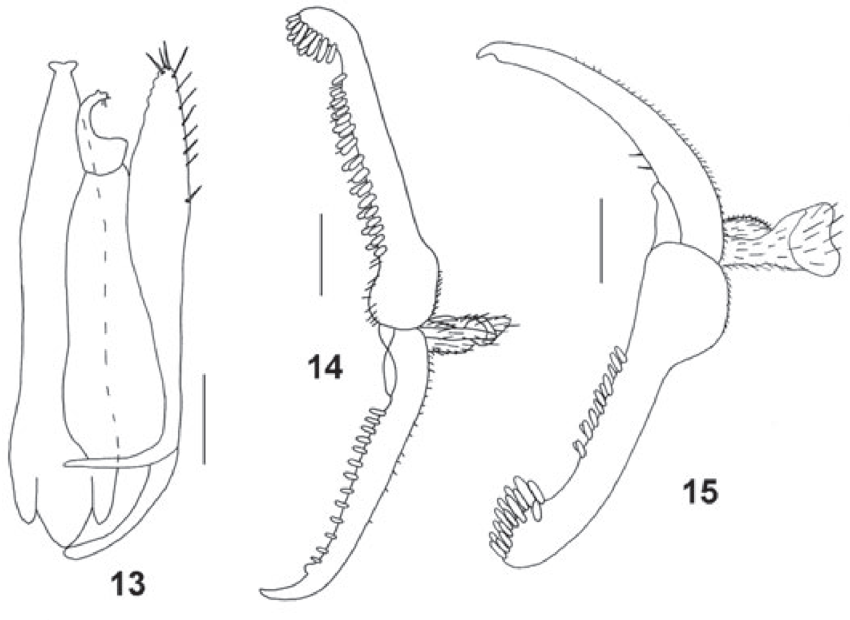
Female. Unknown.

Holotype: ♂ "KENYA: Sokoke Forest, 8.v.1976, Ian Bampton"; [red] "*Thaumatodryinus sokokensis* sp. n. M. Olmi det. 2005, ♂" (AEIC).

Hosts: Unknown.

Comparison: The male of *T. sokokensis* is similar to that of *T. merinus* Olmi, 2004*b*, but the head is black, with only mandibles testaceous. By contrast, in *T. merinus* the head is extensively testaceous.

Remarks: *T. townesi* was described on the basis of both sexes. The male, however, was not reared, but tentatively associated to the female holotype according to the systematics of that time. Afterwards, *T. townesi* was attributed by Olmi (1990*b*) to *Pseudodryinus* Olmi, 1990. In fact, the female agrees with the morphologic characters of *Pseudodryinus*. On the contrary, the male does not agree, because the minimum distance between the notauli is longer than greatest diameter of posterior ocelli (in *Pseudodryinus* the minimum distance between the notauli is much shorter than breadth of the ocelli). For this reason, the male of *T. townesi* is now attributed to the new species, *T. sokokensis*.



Figs 13–15. (13) *Thaumatodryinus sokokensis* sp. n., male holotype, genitalia, scale bar = 0.06 mm; (14) *Dryinus irwini* sp. n., female holotype, chela, scale bar = 0.06 mm; (15) *Adryinus mostovskii* sp. n., female holotype, chela, scale bar = 0.08 mm.

Genus *Dryinus* Latreille, 1804

Dryinus irwini sp. n.

Fig. 14

Etymology: This species is named after Dr Michael E. Irwin.

Description:

Female.

Fully winged; length 4.06 mm. Head testaceous-reddish, with anterior third of face and clypeus testaceous; antennae testaceous reddish; prothorax testaceous-reddish; rest of mesosoma black; gaster and legs testaceous-reddish. Antennae clavate; antennal segments in following proportions: 6:6:30:14:12:9:8:7:6:8. Head dull, excavated, granulated, with face sculptured by numerous longitudinal striae; frontal line complete; occipital carina complete; occiput excavated; POL = 2.5; OL = 2.5; OOL = 11; OPL = 1; TL = 5; greatest diameter of posterior ocelli = 2. Pronotum dull, granulated, crossed by slight anterior transverse impression and strong posterior transverse furrow; disc humped; posterior collar short; pronotal tubercles not reaching tegulae. Scutum, scutellum and metanotum hairy, dull, granulated and reticulate rugose. Notauli absent. Propodeum dull, reticulate rugose, without transverse or longitudinal keels. Forewing hyaline, with 2 distinct dark transverse bands; distal part of stigmal vein longer than proximal part (16:5). Fore tarsal segments in following proportions: 18:2:6:14:23. Enlarged claw (Fig. 14) with large subdistal tooth and row of 13 lamellae. Segment 5 of front tarsus (Fig. 14) with 2 rows of approximately 28 lamellae; distal apex of segment 5 with group of about 18 lamellae. Tibial spurs 1, 1, 2.

Male. Unknown.

Holotype: ♀ "SOUTH AFRICA: *Eastern Cape*, 37 km NW Willowmore, Grootrivierberg Range, 33°11.46'S:24°09.51'E, alt. 700 m, 19–24.xi.1999, Malaise trap, M.E. Irwin *et al.*"; [red] "*Dryinus irwini* sp. n. M. Olmi det. 2006, ♀" (CNCI).

Hosts: Unknown.

Comparison: *D. irwini* belongs to *D. ugandanus* group. The female of this new species is similar to that of *D. pseudoafer* Olmi, 1993. The main differences are the following: in *D. pseudoafer*, head completely granulated, scutellum granulated, forewing with 2 slight dark spots; in *D. irwini*, head granulated, with face sculptured by numerous longitudinal striae, scutellum reticulate rugose, forewing with two distinct dark transverse bands.

Subfamily Gonatopodinae Kieffer, 1906

Genus *Adryinus* Olmi, 1984

Adryinus mostovskii sp. n.

Fig. 15

Etymology: This species is named after Dr Mikhail Mostovski.

Description:

Female.

Fully winged; length 4.68 mm. Head black, with mandibles and clypeus ferruginous-reddish; antennae testaceous, with segments 7–10 brown; mesosoma black, with lateral regions, anterior and posterior margin of pronotum, dorsal stripe of propleura reddish; gaster ferruginous, with a few brown areas; legs ferruginous-testaceous. Antennae clavate; antennal segments in following proportions: 15:6:22:15:11:8:6:5:5:7. Head dull, excavated, granulated and reticulate rugose, without numerous parallel keels on face and vertex; occiput granulated and sculptured by numerous longitudinal keels; frontal line complete; occipital carina absent. POL = 6; OL = 2.5; OOL = 12. Maxillary palpi 6- segmented; labial palpi 3-segmented. Pronotum crossed by transverse impression, dull, granulated and sculptured by numerous longitudinal striae on collar and around disc; posterior edges of pronotum rounded, not produced into lobes. Scutum dull, granulated and with numerous longitudinal keels. Notauli absent. Scutellum granulated and reticulate rugose, with no longitudinal keels. Metanotum very reduced and short, reticulate rugose. Propodeum reticulate rugose, with 2 short longitudinal keels on posterior surface. Forewing with two dark transverse bands; distal part of stigmal vein approximately 1.6 as long as proximal part (8:5). Fore tarsal segments in following proportions: 22:3:7:12:22. Enlarged claw (Fig. 15) with subapical tooth and 4 bristles. Segment 5 of front tarsus (Fig. 15) with two rows of 7+6 lamellae; distal apex of segment 5 with group of at least 30 lamellae. Tibial spurs 1, 0, 1.

Male. Unknown.

Holotype: ♀ "SOUTH AFRICA: *KwaZulu-Natal*, Royal Natal Nat. Res., 28°41.4'S:28°56.3'E, alt. 1420 m, 10–13.xii.2004, Malaise trap, M. Mostovski"; [red] "*Adryinus mostovskii* sp. n. M. Olmi det. 2006, ♀" (NMSA).

Hosts: Unknown.

Comparison: The female of *A. mostovskii* is similar to that of *A. bellicosus* (Benoit, 1950). The main differences are: in *A. bellicosus*, head and scutellum with longitudinal keels, clypeus black; in *A. mostovskii*, head and scutellum without longitudinal keels, clypeus ferruginous-reddish.

Genus *Gonatopus* Ljungh, 1810

Gonatopus camposensis sp. n.

Figs 16, 17

Etymology: This species is named after the type locality, Campo National Park.

Description:

Female.

Apterous; length 3.56 mm. Head brown, with genae, clypeus and mandibles testaceous brown; antennae brown, with segment 1 testaceous; mesosoma brown, with scutum and metanotum testaceous-brown; gaster brown; legs brown. Antennae clavate, with rhinaria on segments 6–10; antennomeres in following proportions: 10:5:14:6:5:5:5:5:4.5:9. Head very excavated, dull, granulated; occiput very excavated (Fig. 16); frontal line complete; occipital carina absent; POL = 0.5; OL = 1; OOL = 8; temples absent. Maxillary palpi 4-segmented; labial palpi 2-segmented. Pronotum crossed by strong and broad transverse impression, with anterior collar and sides shiny, smooth and without sculpture; disc of pronotum sculptured by numerous longitudinal striae. Scutum shiny, smooth, granulated, without lateral points. Scutellum small and without sculpture, slightly inclined. Metanotum slightly hollow behind scutellum, transversely striate, with lateral sides protruding; lateral protrusions of metanotum rounded. Metathorax + propodeum dull, with anterior surface and disc sculptured by numerous longitudinal striae; posterior surface of propodeum transversely striate; disc of metathorax + propodeum with strong median longitudinal furrow. Meso-metapleural suture distinct and complete. Mesopleura and metapleura shiny, transversely striate. Fore tarsal segments in following proportions: 14:2.5:5:13:23. Enlarged claw (Fig. 17) with large subapical tooth and row of 9 lamellae and 1 bristle. Segment 5 of front tarsus (Fig. 17) with two rows of 20 lamellae; distal apex with group of approximately 20 lamellae. Tibial spurs 1, 0, 1.

Male. Unknown.

Holotype: ♀ "CAMEROON: *South Prov*., Campo Nat. Park, 43.3 km 108° ESE Campo, 290 m, 7.iv.2000, sifted litter in rainforest, B.L. Fisher, California Academy of Sciences, BLF 2298"; [red] "*Gonatopus camposensis* sp. n. M. Olmi det. 2005, ♀" (CAS).

Hosts: Unknown.

Comparison: *G. camposensis* belongs to *G. pilosoides* group. The female of *G. camposensis* is similar to those of *G. acutus* (Olmi, 1984) and *G. vannoorti* Olmi, 2006. The main differences are the following: in *G. camposensis*, anterior surface of metathorax + propodeum sculptured by many strong longitudinal striae; disc of metathorax + propodeum with a median longitudinal furrow; head very excavated (Fig. 16); in *G. acutus* and *G. vannoorti*, anterior surface of metathorax + propodeum smooth, without sculpture, or granulated, or punctate, not sculptured by striae; disc of metathorax + propodeum without a median longitudinal furrow; head less excavated (Olmi 2006, figs 14, 15).

Gonatopus maritimus sp. n.

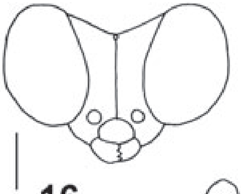
Figs 18, 19, 20

Etymology: From the Latin adjective *maritimus*, because the holotype was collected near the sea.

Description:

Female.

Apterous; length 2.12–2.62 mm (holotype 2.12 mm). Head black, with mandibles and borders of clypeus yellow; antennae brown, with ventral side of segment 1 yellow; mesosoma black; gaster brown; legs brown, with tarsi and articulations testaceous. Head excavated, shiny, without sculpture, except vertex and temples slightly granulated; frontal line complete; occipital carina barely present behind and on sides of ocellar triangle; POL = 1; OL = 2; OOL = 7; temples very long, slightly shorter than half of eyes (7:18). Maxillary palpi 5-segmented; labial palpi 2-segmented. Antennae clavate; antennal segments in following proportions: 5:4:11:7:6:5.5:5:5.5:4.5:7. Pronotum crossed by strong transverse impression, shiny, hairy, slightly granulated, with anterior collar partly without sculpture. Scutum dull, granulated, with two strong lateral points (Fig. 18). Scutellum very inclined. Metanotum hollow behind scutellum (Fig. 19). Metathorax + propodeum dull, slightly granulated, with strong median longitudinal furrow (Fig. 19), with anterior surface slightly granulated and posterior surface strongly transversely striate. In a paratype posterior surface of metathorax + propodeum rugose, with transverse striae not distinctly visible. Mesopleura slightly granulated, not transversely striate. Metapleura transversely striate. Meso-metapleural suture distinct and complete. Fore tarsal segments in following proportions: 11:2:3:14:21. Enlarged claw (Fig. 20) with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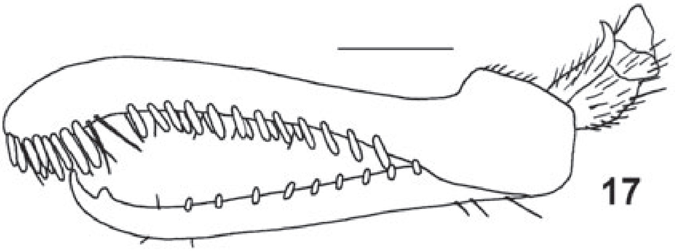
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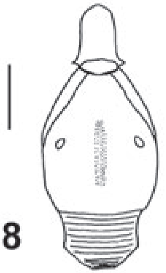
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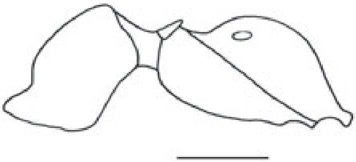
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Figs 16–19. (16, 17) *Gonatopus camposensis* sp. n., female holotype: (16) head in frontal view, scale bar = 0.33 mm, (17) chela, scale bar = 0.06 mm; (18, 19) *G. maritimus* sp. n., female holotype: (18) mesothorax and metathorax + propodeum in dorsal view, scale bar = 0.12 mm, (19) mesosoma in lateral view, scale bar = 0.28 mm.

small subapical tooth and 5 or 6 peg-like hairs (in holotype). Segment 5 of front tarsus (Fig. 20) with inner side proximally not serrate and two rows of 3–5 (proximal) + 16–21 lamellae; distal apex with group of at least 12 lamellae. Tibial spurs 1, 0, 1.

Male. Unknown.

Holotype: ♀ "SOUTH AFRICA: *Western Cape*, West Coast National Park, about 2 km S Dainepos Rd. Junction, 2.ii.2006, M. Olmi"; [red] "*Gonatopus maritimus* sp. n. M. Olmi det. 2006, ♀" (SAMC).

Paratypes: NAMIBIA: 51 km S Grünau, along Rd B1, C – 1.iii.2006, B – 5.iii.2006, E – 5.iv.2006, reared from a female adult of *Aconurella compta* (Naudé), M. Olmi, 1♀ (NNIC); 27.6 km S Omaruru, along Rd C33, C – 8.iii.2006, B – 12.iii.2006, E – 12.iv.2006, reared from a nymph of *Austroagallia cuneata* (Cogan), M. Olmi, 1♀ (MOLC); same locality label, C – 8.iii.2006, B – 13.iii.2006, E – 12.iv.2006, reared from a nymph of *A. cuneata*, M. Olmi, 1♀ (NNIC); same locality label, C – 8.iii.2006, B – 11.iii.2006, E – 12.iv.2006, reared from a nymph of *A. cuneata*, M. Olmi, 1♀ (MOLC); NAMIBIA: same locality label, C – 10.iii.2006, B – 14.iii.2006, E – 11.iv.2006, reared from an adult of *A. compta*, M. Olmi, 1♀ (MOLC); 6.5 km W Aus, along Rd B4, C – 12.iii.2006, B – 14.iii.2006, E – 13.iv.2006, reared from an adult of *A. compta*, M. Olmi, 1♀ (MOLC).

Hosts: In Namibia, *Austroagallia cuneata* and *Aconurella compta* (Cicadellidae); in South Africa, the holotype has been observed attacking adults of *Colistra* sp. (Cicadellidae).

Comparison: *G. maritimus* belongs to *G. incognitus* group. Its female is similar to that of *G. aethiopicus* Olmi, 1984, but the scutum has two strong lateral points (Fig. 18), not present in *G. aethiopicus* (Olmi 1984, fig. 1124A).

Gonatopus cornutus (Benoit, 1951), **comb. n.**

Figs 21–25

Pseudogonatopus cornutus Benoit, 1951*b*: 159 (Type locality: South Africa, Western Cape, Swellendam); Olmi 1984: 1803.

P. cornutus (Benoit, 1951) was known only on the basis of the male holotype. As the systematics of Dryinidae was mainly based on females, in my revision of world dryinids

(Olmi 1984), I considered this species *incertae sedis*, because it was not possible to attribute it to a genus, in spite of the association to *Pseudogonatopus* proposed by Benoit. In 2006 I collected the female and male of this species in South Africa, Western Cape, Cederberg Mts. The discovery of the female permitted the attribution of this species to *Gonatopus*. The description of the female is presented here, together with an updated description of the male.

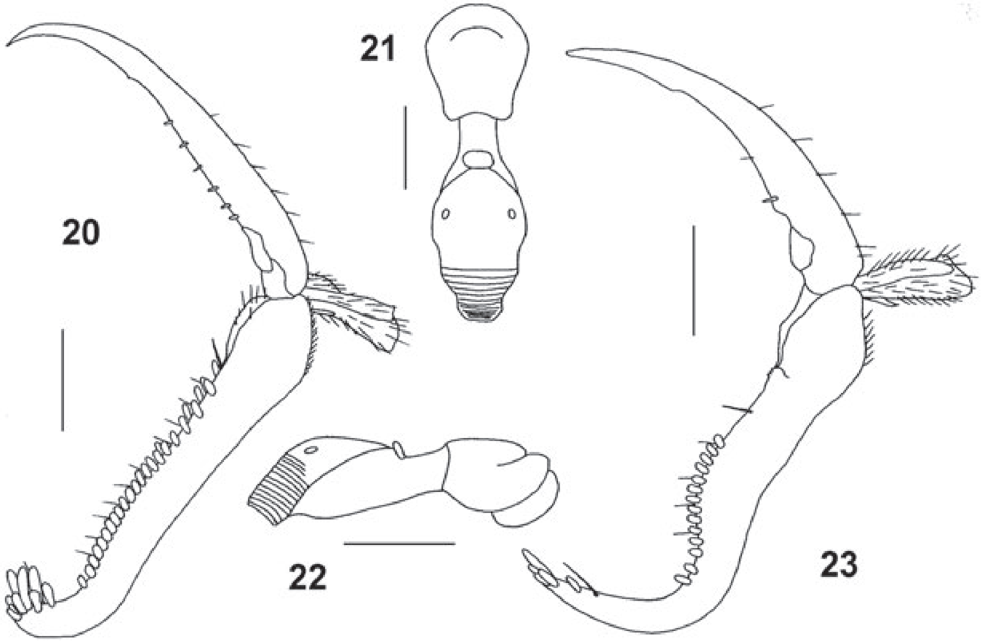
Description:

Female.

Apterous; length 2.31 mm. Completely yellow-testaceous, with petiole black and eyes grey. Antennae clavate; antennal segments in following proportions: 7:4:6:6:5:5:4:3.5:3.5:6. Head excavated, shiny, smooth, without sculpture; frontal line complete; occipital carina absent; POL = 1; OL = 1; OOL = 5. Maxillary palpi 4-segmented; labial palpi 2-segmented. Pronotum shiny, smooth, without sculpture, crossed by transverse impression. Scutum less than twice as long as broad, without lateral points (Fig. 21). Scutellum shiny, smooth, inclined. Metanotum hollow behind the scutellum (Fig. 22). Metathorax + propodeum shiny, smooth, without sculpture, without track of median longitudinal furrow; posterior surface of propodeum transversely striate. Mesopleura shiny, smooth, without sculpture. Meso-metapleural suture distinct and complete. Fore tarsal segments in following proportions: 7:1.5:2.5:8:14. Enlarged claw (Fig. 23) with small subapical tooth, 1 peg-like hair and 1 hair. Segment 5 of front tarsus (Fig. 23) with inner short proximal serrate region and with 1 row of 14 lamellae; distal apex of segment 5 unusually very long, with group of 4 lamellae. Tibial spurs 1, 0, 1.

Male.

Fully winged; length 1.68–2.00 mm (holotype 2.00 mm). Head black, with mandibles testaceous; antennae brown; mesosoma black; gaster brown-reddish; legs brown-testaceous. Antennae hairy, filiform; antennal segments of male from South Africa, Uitkyk Pass, in following proportions: 5:4.5:5.5:5.5:4.5:5:4.5:5:4.5:6.5; antennal segment 3 less than 3 times as long as broad: 5.5:2 (in a male specimen from South Africa, Uitkyk Pass). Head shiny, hairy, strongly punctate, without sculpture among punctures; frontal line of holotype incomplete, short, visible only in front of anterior ocellus; frontal line of a male specimen from South Africa, Uitkyk Pass, absent; occipital carina absent; in male specimen from South Africa, Uitkyk Pass, POL = 4; OL = 1.3; OOL = 4.5; greatest diameter of posterior ocelli = 2. Vertex of head with two oval smooth and shiny areas situated on sides of posterior ocelli and occupying areas between posterior ocelli and eyes; these areas surrounded anteriorly by very high carina (Fig. 24) and posteriorly by lower carina continuing on temples and behind ocellar triangle (Fig. 24). Temples distinct, crossed by the above sharp carina parallel to posterior margin of eyes. Maxillary palpi 4-segmented; labial palpi 2-segmented. Scutum shiny, strongly punctate, without sculpture among punctures; notauli complete, posteriorly separated; minimum distance between notauli as long as greatest diameter of posterior ocelli (in holotype), or shorter than greatest diameter of posterior ocelli (1.3:2) (in specimen from South Africa, Uitkyk Pass). Scutellum and metanotum shiny, smooth, slightly punctate, without sculpture among punctures. Propodeum dull, slightly reticulate rugose, with areolae small; dorsal surface with median longitudinal furrow; posterior surface without longitudinal or transverse keels. Forewing hyaline, without dark transverse



Figs 20–23. (20) *Gonatopus maritimus* sp. n., female holotype, chela, scale bar = 0.04 mm; (21–23) *G. cornutus* (Benoit), female from Uitkyk Pass: (21) mesosoma in dorsal view, scale bar = 0.26 mm, (22) mesosoma in lateral view, scale bar = 0.37 mm, (23) chela, scale bar = 0.04 mm.

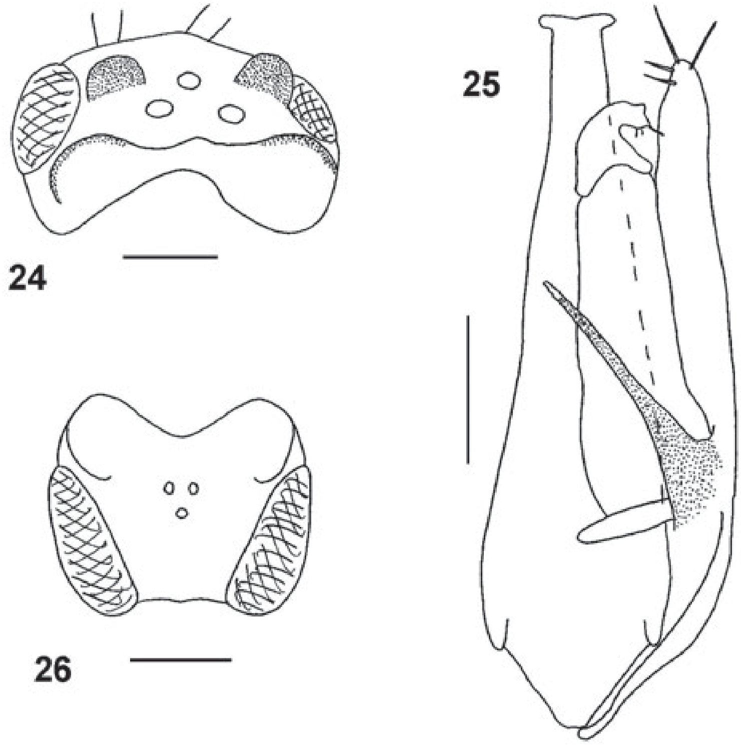
bands, with only costal cell surrounded by strongly pigmented veins (other basal cells surrounded by less pigmented veins); marginal cell open; stigmal vein regularly curved, with distal part longer than proximal part (approximately 11:4). Dorsal process of parameres (Olmi 1984, fig. 1256; Fig. 25) short and slender, with distal apex pointed. Tibial spurs 1, 1, 2.

Holotype: ♂ "SOUTH AFRICA: *Western Cape*, Swellendam, 17.xii.1931–18.i.1932, R.E. Turner" (BMNH).

Other material examined: SOUTH AFRICA: *Western Cape,* Cederberg Mts., Uitkyk Pass, 7.ii.2006, M. Olmi, 1♀ (MOLC); same locality label, C – 7.ii.2006, B – 9.ii.2006, E – 10.iii.2006, M. Olmi reared from an adult of *Elginus saltus* (Naudé), 1♂ (SAMC); NAMIBIA: 89 km S Keetmanshoop, along Rd B1, C – 1.iii.2006, B – 2.iii.2006, E – 30.iii.2006, reared from a nymph of *Aconurella compta* (Naudé), M. Olmi, 1♂ (MOLC); same locality label, C – 1.iii.2006, B – 5.iii.2006, E – 2.iv.2006, reared from a nymph of *A. compta*, M. Olmi, 1♂ (MOLC); same locality label, C – 1.iii.2006, B – 7.iii.2006, E – 6.iv.2006, reared from a nymph of *A. compta*, M. Olmi, 1 ♂ (NNIC).

Hosts: In Namibia, *Aconurella compta* (Cicadellidae); in South Africa, *Elginus saltus* (Cicadellidae).

Comparison: The morphological characters of the female *G. cornutus* suggest that it belongs to the *G. incognitus* group. The female of this species is similar to those of *G. cuambensis* Olmi, 2004, *G. upembanus* Olmi, 1984, and *G. martellii* Olmi, 2002, but its segment 5 of fore tarsi has an unusually long distal apex (Fig. 23). In contrast, in the other three species the segment 5 of fore tarsi has a short distal apex (Olmi 1984, fig. 1133; 2002, fig. 2; 2004*a*, fig. 3). The male of *G. cornutus* is easily recognisable in having the high carina in front of the smooth areas situated on the sides of the posterior ocelli (Fig. 24). This character is also present in *G. ridens* Olmi, 1984, but the two



Figs 24–26. (24, 25) *Gonatopus cornutus* (Benoit), male: (24) from 89 km S Keetmanshoop, head from behind, scale bar = 0.13 mm; (25) from Uitkyk Pass, genitalia, scale bar = 0.04 mm; (26) *G. fortis* sp. n., female holotype, head in dorsal view, scale bar = 0.22 mm.

species can be distinguished by the following differences: in *G. ridens*, notauli posteriorly joint, or separated, but very near, with minimum distance between notauli less than greatest diameter of posterior ocelli; scutum dull, granulated; in *G. cornutus*, notauli posteriorly separated; minimum distance between notauli as long as breadth of posterior ocelli; scutum shiny, punctate, without sculpture among punctures.

Gonatopus fortis sp. n.

Figs 26, 27

Etymology: Latin *fortis* (robust).

Description:

Female.

Apterous; length 3.31 mm. Head black, with mandibles, clypeus, anterior margin of face and part of genae testaceous; antennae black, with segments 1 and 2 testaceous; mesosoma black, with lateral margins of pronotum brown-testaceous and scutellum almost completely yellow; occasionally mesosoma completely black; gaster brown; legs brown, with tibiae, tarsi and trochanters testaceous-brown. Head excavated, shiny, hairless, smooth, without sculpture; frontal line complete; occipital carina absent;

temples prominent, smooth, without sculpture, crossed by sharp carina (Fig. 26). Antennae clavate; antennomeres of holotype as following: 8:6.5:10.5:9:8:7:6.5:6.5:6:7. Third antennal segment as broad as segment 2. POL = 1; OL = 2; OOL = 7; greatest diameter of posterior ocelli = 2. Maxillary palpi 4-segmented; labial palpi 2-segmented. Pronotum crossed by strong transverse impression, smooth, shiny, without sculpture. Scutum very long, about twice as long as broad (11:5.5), shiny, with a few short longitudinal striae, without lateral points. Scutellum flat, shiny, smooth, circular. Stalk between pronotum and metanotum (composed of scutum + scutellum) about 3 times as long as broad. Metanotum very long, transversely striate, not hollow behind scutellum. Metathorax + propodeum shiny, with posterior surface transversely striate; anterior surface shiny, without sculpture; disc with track of median longitudinal furrow. Mesopleura shiny, with posterior half smooth and without sculpture, and anterior half transversely striate. Metapleura transversely striate. Meso-metapleural suture distinct and complete. Fore tarsal segments in following proportions: 15:2.5:4:13:21. Enlarged claw (Fig. 27) with small subapical tooth, 4 peg-like hairs and 1 bristle. Segment 5 of front tarsus (Fig. 27) with 1 row of 19 lamellae; distal apex of segment 5 with group of about 14 lamellae. Tibial spurs 1, 0, 1.

Male. Unknown.

Holotype: ♀ "NAMIBIA: 51 km S Grünau, along Rd B1, C – 1.iii.2006, B – 3.iii.2006, E – 1.iv.2006, reared from an adult female of *Aconurella compta* (Naudé), M. Olmi"; [red] "*Gonatopus fortis* sp. n. M. Olmi det. 2006, ♀" (NNIC).

Paratypes: NAMIBIA: 89 km S Keetmanshoop, along Rd B1, C – 1.iii.2006, B – 4.iii.2006, E – 1.iv.2006, reared from a nymph of *A. compta*, M. Olmi, 1♀ (MOLC); same locality label, C – 1.iii.2006, B – 3.iii.2006, E – 31.iii.2006, reared from a nymph of *A. compta*, M. Olmi, 1♀ (NNIC); same locality label, C – 1.iii.2006, B – 3.iii.2006,E – 3.iv.2006, reared from a nymph of *A. compta*, M. Olmi, 1♀ (SAMC); 42 km N Kalkrand, along Rd. B1, 9.iii.2006, M. Olmi, 1♀ (MOLC); 38 km W Keetmanshoop, along Rd B4, C – 10.iii.2006, B – 11.iii.2006, E – 11.iv.2006, reared from an adult of *A. compta*, M. Olmi, 1♀ (NNIC); same locality label, C – 10.iii.2006, B – 18.iii.2006, E – 11.iv.2006, reared from a nymph of *A. compta*, 1♀ (NNIC).

Hosts: In Namibia, *Aconurella compta* (Cicadellidae).

Comments: *G. fortis* belongs to *G. incognitus* group. The female is similar to that of *G. leptothorax* (Ceballos, 1936), but it may be distinguished by the less slender stalk between pronotum and metanotum (about 3 times as long as broad in *G. fortis*; about 4 times as long as broad in *G. leptothorax*) and the different sculpture of the temples (rugose in *G. leptothorax*; smooth in *G. fortis*).

Gonatopus karibibensis sp. n.

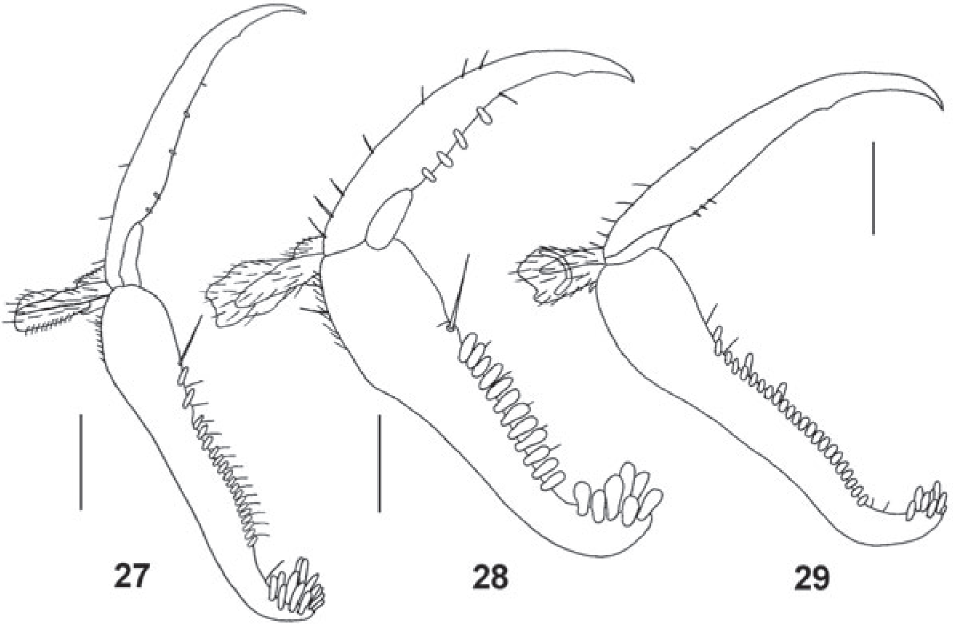
Fig. 28

Etymology: This species is named after the type locality, Karibib.

Description:

Female.

Apterous; length 2.25. Head brown, with mandibles, clypeus and anterior region of face testaceous; antennae testaceous; mesosoma testaceous-reddish, with propleura and mesopleura darkened; gaster brown; legs testaceous, with coxae and clubs of hind femora brown. Antennae clavate; antennomeres of holotype in following proportions: 6:4:5.5:4:3:3:2.5:4:3:5. Head excavated, shiny, slightly granulated; temples distinct;



Figs 27–29. Chelae of female holotypes: (27) *Gonatopus fortis* sp. n., scale bar = 0.05 mm; (28) *G. karibibensis* sp. n., scale bar = 0.04 mm; (29) *G. kolyadai* sp. n., scale bar = 0.07 mm.

frontal line incomplete, only present in posterior half of face; occipital carina absent; POL = 1; OL = 1; OOL = 6.5; greatest diameter of posterior ocelli = 1. Maxillary palpi missing in holotype; labial palpi 2-segmented. Pronotum crossed by strong transverse impression, shiny, without sculpture. Scutum less than twice as long as broad, shiny, without lateral points. Scutellum shiny, smooth, circular, slightly inclined. Metanotum very short, inclined, transversely striate, not hollow behind scutellum. Metathorax + propodeum shiny, with median longitudinal furrow, with posterior surface transversely striate; anterior surface of metathorax + propodeum shiny, with a few median longitudinal striae. Mesopleura and metapleura transversely striate. Meso-metapleural suture distinct and complete. Fore tarsal segments in following proportions: 9:2:3:8:14. Enlarged claw (Fig. 28) with small subapical tooth, 4 large lamellae and 1 hair. Segment 5 of front tarsus (Fig. 28) with 1 row of 12 lamellae; distal apex with group of about 8 lamellae. Tibial spurs 1, 0, 1.

Male. Unknown.

Holotype: ♀ "NAMIBIA: 17 km S Karibib, along Road C32, 8.iii.2006, M. Olmi"; [red] "*Gonatopus karibibensis* sp. n. M. Olmi det. 2006, ♀" (NNIC).

Hosts: In Namibia, the holotype has been observed attacking *Paradorydium spatulatum* (Naudé) (Cicadellidae).

Comments: *G. karibibensis* belongs to the *G. incognitus* group. The female is similar to that of *G. tananarivei* Olmi, 1984, but it may be distinguished by the enlarged claw (with peg-like hairs in *G. tananarivei*; with lamellae in *G. karibibensis*) and the colour of mesosoma (black in *G. tananarivei*, testaceous-reddish in *G. karibibensis*).

Gonatopus kolyadai sp. n.

Fig. 29

Etymology: This species is named after Dr Victor Kolyada.

Description:

Female.

Apterous; length 3.31 mm. Head brown, with mandibles, clypeus and short median median longitudinal frontal stripe near clypeus testaceous; antennae testaceous-darkened, with ventral side of segment 1 yellow; mesosoma brown, with scutum, metanotum and distal apex of propodeum testaceous-darkened; petiole black; gaster brown; legs brown, with tarsi and articulations testaceous-darkened. Head flat, dull, granulated; frontal line complete; occipital carina absent; POL = 1; OL = 1; OOL = 7; greatest diameter of posterior ocelli = 1. Antennae clavate; antennal segments in following proportions: 7:5:13:7:6:5.5:5:5:4:6. Maxillary palpi 6-segmented; labial palpi 3-segmented. Pronotum crossed by strong transverse impression, with dorsal surface shiny and without sculpture and lateral regions shiny and slightly granulated. Scutum slightly granulated, with 2 lateral points on sides of scutellum. Metanotum granulated, hollow behind scutellum. Metathorax + propodeum dull, with disc and anterior and posterior surface granulated; posterior surface not transversely striate (only with a few transverse striae at posterior extremity). Mesopleura and metapleura granulated, not transversely striate. Meso-metapleural suture distinct and complete. Fore tarsal segments in following proportions: 12:2:5:16:24. Enlarged claw (Fig. 29) with small subapical tooth and 3 proximal hairs. Segment 5 of front tarsus (Fig. 29) with 2 rows of 3 (proximal) + 22 lamellae; distal apex with group of 9 lamellae. Tibial spurs 1, 0, 1.

Male. Unknown.

Holotype: ♀ "SOUTH AFRICA: *KwaZulu-Natal*, Pietermaritzburg, Hilton [29°32'30.7"S:30°18'18.4"E, alt. 1131 m], 19–21.iv.2005, yellow pan trap, V. Kolyada"; [red] "*Gonatopus kolyadai* sp. n. 2005, ♀" (NMSA).

Hosts: Unknown.

Comparison: *G. kolyadai* belongs to the *G. incognitus* group. The female is similar to those of *G. patrizii* Benoit, 1951, *G. aestivus* Olmi, 1987, and *G. turneri* (Benoit, 1951), but it may be distinguished by the flat head (head excavated in the other three species) and the completely granulated metathorax + propodeum (metathorax + propodeum with a different sculpture in the other three species).

Gonatopus savanensis sp. n.

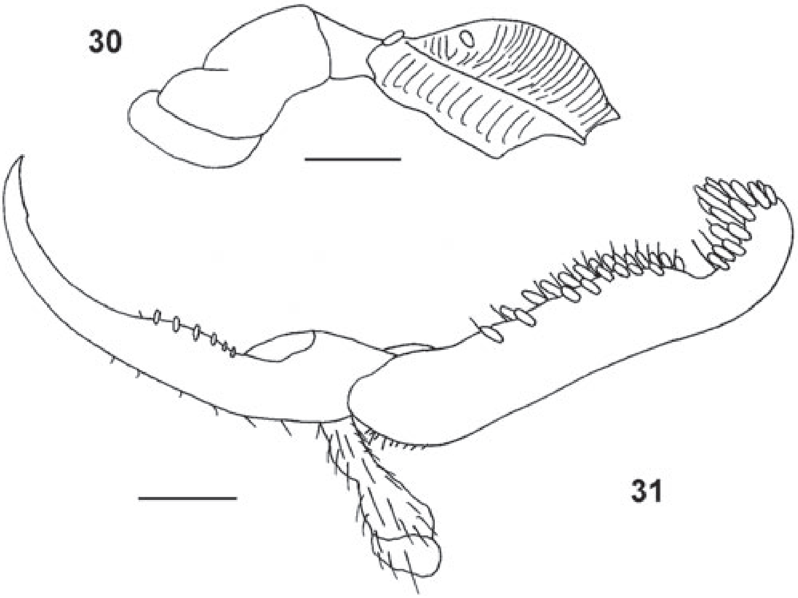
Figs 30, 31

Etymology: This species was collected in savannah.

Description:

Female.

Apterous; length 5.87 mm. Head black, with mandibles, clypeus, genae and two short stripes along orbits testaceous; antennae testaceous, with segments 3, proximal half of 4, 8–10 darkened; mesosoma black, with sides of pronotum testaceous; gaster brown; legs testaceous, with clubs of femora slightly darkened. Antennae clavate; antennal segments in following proportions: 12:6:26:17:15:11:10:9.5:8.5:10. Head excavated,



Figs 30, 31. *Gonatopus savanensis* sp. n., female holotype: (30) mesosoma in lateral view, scale bar = 0.53 mm; (31) chela, scale bar = 0.08 mm.

shiny, with face smooth and without sculpture and vertex, temples and occiput granulated; frontal line complete; occipital carina absent; POL = 2; OL = 2; OOL = 9; greatest diameter of posterior ocelli = 2. Maxillary palpus with 6 segments; labial palpus with 3 segments. Pronotum crossed by strong transverse impression, with anterior collar and disc shiny, smooth and without sculpture; sides of pronotum partly granulated and partly sculptured by a few longitudinal striae. Scutum shiny, sculptured by a few longitudinal striae, laterally with 2 strong points situated on sides of scutellum. Scutellum shiny, smooth, inclined. Metanotum very short, transversely striate and deeply hollow behind scutellum (Fig. 30). Metathorax + propodeum shiny, with disc and anterior surface smooth and without sculpture; posterior surface of metathorax + propodeum sculptured by numerous transverse striae; mesopleura and metapleura transversely striate. Meso-metapleural suture distinct and complete. Fore tarsal segments in following proportions: 20:3.5:7:18:27. Enlarged claw (Fig. 31) with small subapical tooth and 1 row of 6 peg-like hairs + 1 hair. Segment 5 of front tarsus (Fig. 31) with two rows of 7 + 13 lamellae; distal apex of segment 5 with group of approximately 21 lamellae. Tibial spurs 1, 0, 1.

Male. Unknown.

Holotype: ♀ “BURKINA FASO: *Kompienga Prov.*, 20 km S Pama, 3–24.ix.1988, savana, interception trap, F. Génier, M. Sanborne & F.M. Tou”; [red] “*Gonatopus savanensis* sp. n. M. Olmi det. 2006, ♀” (CNCI).

Hosts: Unknown.

Comparison: *G. savanensis* belongs to the *G. incognitus* group. The female is similar to those of *G. operosus* Olmi, 1993, and *G. trochantericus* (Benoit, 1953*b*), but it may be distinguished by the position of the subapical tooth of the enlarged claw (Fig. 31); it is in fact nearer the distal apex than in the other two species (Olmi 1984, figs 1135, 1136).

Subfamily **Apoaphelopinae** subfam. n.

Figs 32–35

Type genus: *Apoaphelopus* gen. n.

Male.

Fully winged; forewing with only costal cell distinctly enclosed by pigmented veins, with stigmal vein present, without pterostigma; other veins of forewing (except those surrounding costal cell) absent, course of M and Cu veins being marked by dark stripes (Figs 32, 33); hind wing (Figs 32, 33) without costal vein, with dark medial longitudinal stripe; epicnemium distinct; mandibles with 1 tooth; palpi absent; basivolsella with lateral distal process parallel to distivolsella (Figs 34, 35); tibial spurs 1, 1, 2.

Female. Unknown.

Hosts: Unknown.

Distribution: Afrotropical.

Comments: As the forewing has only the costal cell enclosed by pigmented veins, the males of Apoaphelopinae are different from all the other males of Dryinidae, except those of Aphelopinae. The main differences between Aphelopinae and Apoaphelopinae concern the forewings: they show a distinct and large pterostigma in Aphelopinae, whereas the pterostigma is absent in Apoaphelopinae; in addition, in both subfamilies all veins are absent, except the stigmal vein and the veins surrounding the costal cell, but in Apoaphelopinae, the space usually occupied by M and Cu veins is marked by long dark stripes, so that apparently at first sight the forewing seems to have true M and Cu veins (really however, there are only dark stripes and not veins). In Aphelopinae, on the other hand, the forewings are completely hyaline, or at most with a slight dark spot

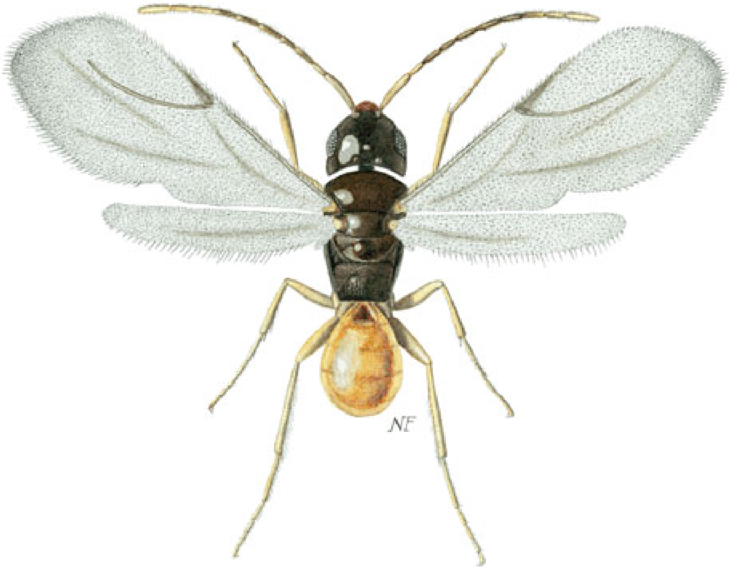


Fig. 32. *Apoaphelopus mostovskii* sp. n., male holotype in dorsal view. Length 1.00 mm.

beneath the pterostigma, and the course of M and Cu veins is never marked by dark stripes. Another difference concerns the hind wings: in Aphelopinae they are completely hyaline and with a long costal vein; in contrast, in Apoaphelopinae the hind wings show a longitudinal median dark stripe and the costal vein is absent. A further difference concerns the volsellae: in Aphelopinae the basivolsella is situated completely under the distivolsella, as in other subfamilies such as Anteoninae, Conganteoninae, Gonatopodinae and Dryininae. In contrast, in Apoaphelopinae the basivolsella has a lateral distal process parallel to distivolsella, as in Apodryininae, *Bocchus* and Embolemidae. The general aspect of the head of Apoaphelopinae males is that of males of Apodryininae.

After the description of Apoaphelopinae, the key to the males of the subfamilies of Dryinidae published by Olmi (1984) can be modified by replacing couplet 1 as follows:

1 Fully winged; forewing with only costal cell enclosed by pigmented veins (Olmi 1984, fig. 25; Fig. 32); occipital carina complete .... 1'

– Fully winged, or micropterous, or brachypterous, or apterous; forewing of fully winged forms with costal and 1–2 basal cells distinctly enclosed by pigmented veins (Olmi 1984, figs 26, 27); occasionally forewing with only costal cell distinctly enclosed by pigmented veins, but in this case occipital carina absent (in some males of Gonatopodinae) 2

1' Forewing with stigmal vein and pterostigma present (Fig. 37); other veins (except those surrounding costal cell) absent, their course not being marked by dark stripes (Fig. 37); hind wing (Fig. 38) hyaline, with costal vein, without a dark medial

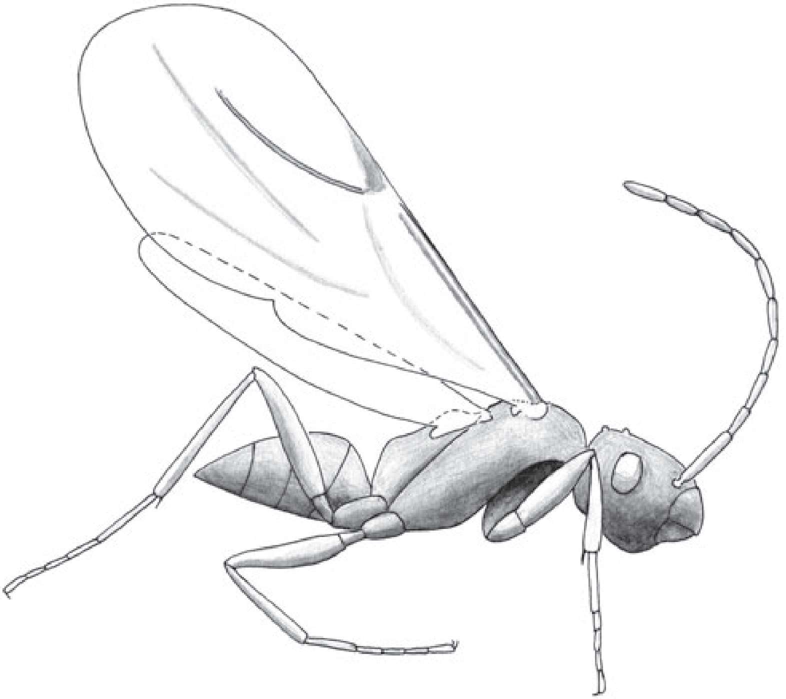


Fig. 33. *Apoaphelopus mostovskii* sp. n., male holotype in lateral view. Length 1.31 mm.

longitudinal stripe; basivolsella completely situated down the distivolsella (Fig. 36) .... 1. **Aphelopinae** Perkins

– Forewing with stigmal vein present (Fig. 32); pterostigma absent (Fig. 32); other veins (except those surrounding costal cell) absent, the course of M and Cu veins being marked by dark stripes (Fig. 32); hind wing (Fig. 32) without costal vein, with a dark medial longitudinal stripe; basivolsella with a lateral distal process parallel to distivolsella (Fig 34, 35) .... 12. **Apoaphelopinae** subfam. n.

2 Always fully winged; forewing with costal and median cells distinctly enclosed by pigmented veins (Olmi 1984, fig. 26); occipital carina complete .... 2. **Conganteoninae** Olmi

– Fully winged, or rarely micropterous, or brachypterous, or apterous; forewing of fully winged forms with costal, median and submedian cells distinctly enclosed by pigmented veins (Olmi 1984, fig. 27); occasionally only the costal cell is distinctly enclosed by pigmented veins, but in this case the occipital carina is absent (in some males of Gonatopodinae) 3

Genus **Apoaphelopus** gen. n.

Figs 32–35

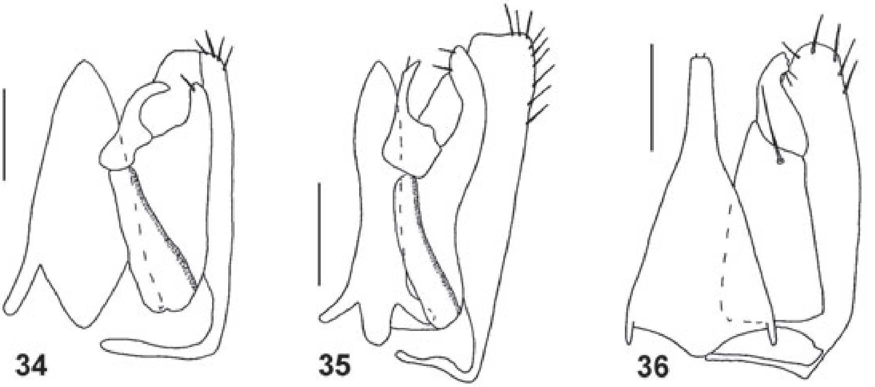
Etymology: The genus name refers to apomorphic characters and the genus *Aphelopus* Dalman, 1823.

Type species: *Apoaphelopus mostovskii* sp. n.

Description:

Male.

Fully winged; forewing with only costal cell distinctly enclosed by pigmented veins, with stigmal vein present, without pterostigma; other veins of forewing (except those surrounding costal cell) absent, the course of M and Cu veins being marked by dark stripes (Figs 32, 33); hind wing (Figs 32, 33) without costal vein, with dark medial longitudinal stripe; epicnemium distinct; mandibles with 1 tooth; palpi absent; occipital carina complete; temples very long, but shorter than eyes (Fig. 32); antennae short,



Figs 34–36. Male genitalia: (34) *Apoaphelopus mostovskii* sp. n., holotype, scale bar = 0.04 mm; (35) *A. niassensis* sp. n., holotype, scale bar = 0.05 mm; (36) *Aphelopus melaleucus* (Dalman), from Sweden, Västergötland, scale bar = 0.08 mm.

shorter than body; antennal segment 1 twice as long as 2; basivolsella with lateral distal process parallel to distivolsella (Figs 34, 35); tibial spurs 1, 1, 2.

Key to the species of *Apoaphelopus* males

1 Propodeum dull and reticulate rugose .... **mostovskii** sp. n.
– Propodeum completely shiny, smooth and without sculpture ...... **niassensis** sp. n.

Apoaphelopus mostovskii sp. n.

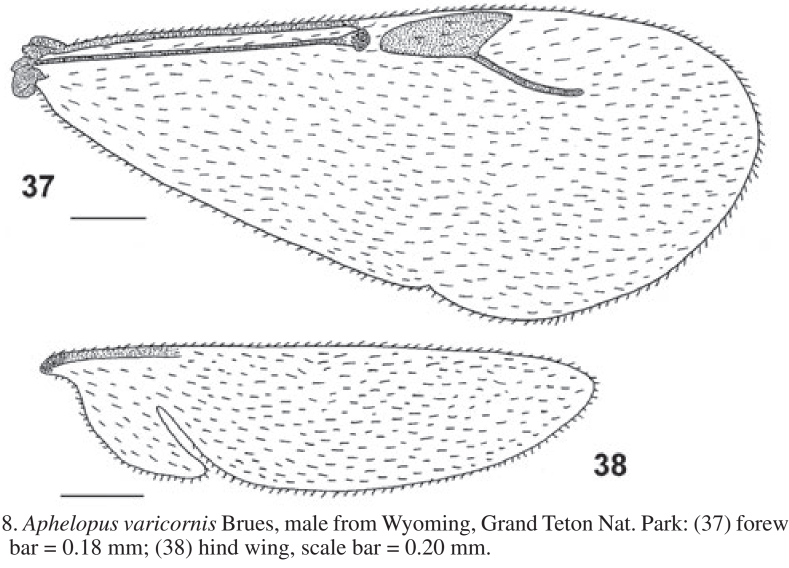
Figs 32–34

Etymology: This species is named after Dr Mikhail Mostovski.

Description:

Male.

Fully winged; length 1.00 mm. Head brown, with mandibles and clypeus testaceous; antennae testaceous-darkened, with segments 1 and 2 yellow-testaceous; mesosoma brown; gaster and legs yellow-testaceous; petiole black. Antennae filiform, very slender and long, shorter than body (Figs 32, 33); antennal segments in following proportions: 6:3:3:3:3:3.5:3:3.5:4:5. Head convex, shiny, without sculpture; occiput very concave, smooth, without sculpture; frontal line absent; occipital carina complete; POL = 2; OL = 1; OOL = 3; minimum distance from eyes to occipital carina = 2; TL = 3; posterior ocelli touching occipital carina; temples very long, shorter than eyes (3:4); mandibles with 1 tooth. Scutum, scutellum and metanotum shiny, completely smooth and without sculpture. Notauli absent. Epicnemium present. Propodeum dull, reticulate rugose. Mesopleura and metapleura shiny, smooth, without sculpture. Forewing (Figs 32, 33) without pterostigma, with costal cell enclosed by pigmented veins, with stigmal vein present and marginal cell open; other veins of forewing absent, veins M and Cu being marked by dark stripes. Hind wing (Fig. 32) with costal vein absent, with dark longi-



Figs 37, 38. *Aphelopus varicornis* Brues, male from Wyoming, Grand Teton Nat. Park: (37) forewing, scale bar = 0.18 mm; (38) hind wing, scale bar = 0.20 mm.

tudinal median stripe. Basivolsella (Fig. 34) with distal process parallel to distivolsella. Palpi absent. Tibial spurs 1, 1, 2.

Holotype: ♂ "SOUTH AFRICA: *KwaZulu-Natal*, Louwsberg, Gwala Gwala [Sanyati], 27°34'S:31°17.9'E, alt. 1090 m, 2–3.vi.2005, yellow pan trap, M. Mostovski"; [red] "*Apoaphelopus mostovskii* sp. n. M. Olmi det. 2006, ♂" (NMSA).

Apoaphelopus niassensis sp. n.

Fig. 35

Etymology: This species is named after the type locality, Niassa Prov.

Description:

Male.

Fully winged; length 1.31 mm. Head brown-testaceous, with mandibles testaceous; antennae testaceous; mesosoma and gaster testaceous-darkened; legs yellow-testaceous. Antennae filiform, very slender and long, shorter than body; antennal segments in following proportions: 7:3:2.5:3:3.5:4:3.5:3.5:3:5. Head convex, subspheroidal, dull, granulated, finely hairy; occiput very concave, smooth, without sculpture; frontal line absent; central area of frons with slight short median longitudinal furrow; occipital carina complete; POL = 3; OL = 1.5; OOL = 2; minimum distance from eyes to occipital carina: 1.5; TL = 2.5; posterior ocelli touching occipital carina; temples very long, shorter than eyes (2.5:5); mandibles with 1 tooth. Scutum, scutellum and metanotum shiny, completely smooth and without sculpture. Notauli absent. Epicnemium present. Propodeum shiny, completely smooth and without sculpture. Mesopleura and metapleura shiny, smooth, without sculpture. Forewing without pterostigma, with costal cell enclosed by pigmented veins, with stigmal vein present and marginal cell open; other veins of forewing absent, veins M and Cu being marked by dark stripes. Hind wing with costal vein absent, with dark longitudinal median stripe. Basivolsella (Fig. 35) with distal process parallel to distivolsella. Palpi absent. Tibial spurs 1, 1, 2.

Holotype: ♂ (teneral) "MOZAMBIQUE: *Niassa Province*, Cuamba District, Cuamba, Farm of the Catholic University of Mozambique, alt. 600 m, 7.iv–2.vi.2006, Malaise trap, M. Olmi"; [red] "*Apoaphelopus niassensis* sp. n. M. Olmi det. 2006, ♂" (MOLC).

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